GROUP 22B

MANUAL TRANSMISSION OVERHAUL

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GENERAL INFORMATION

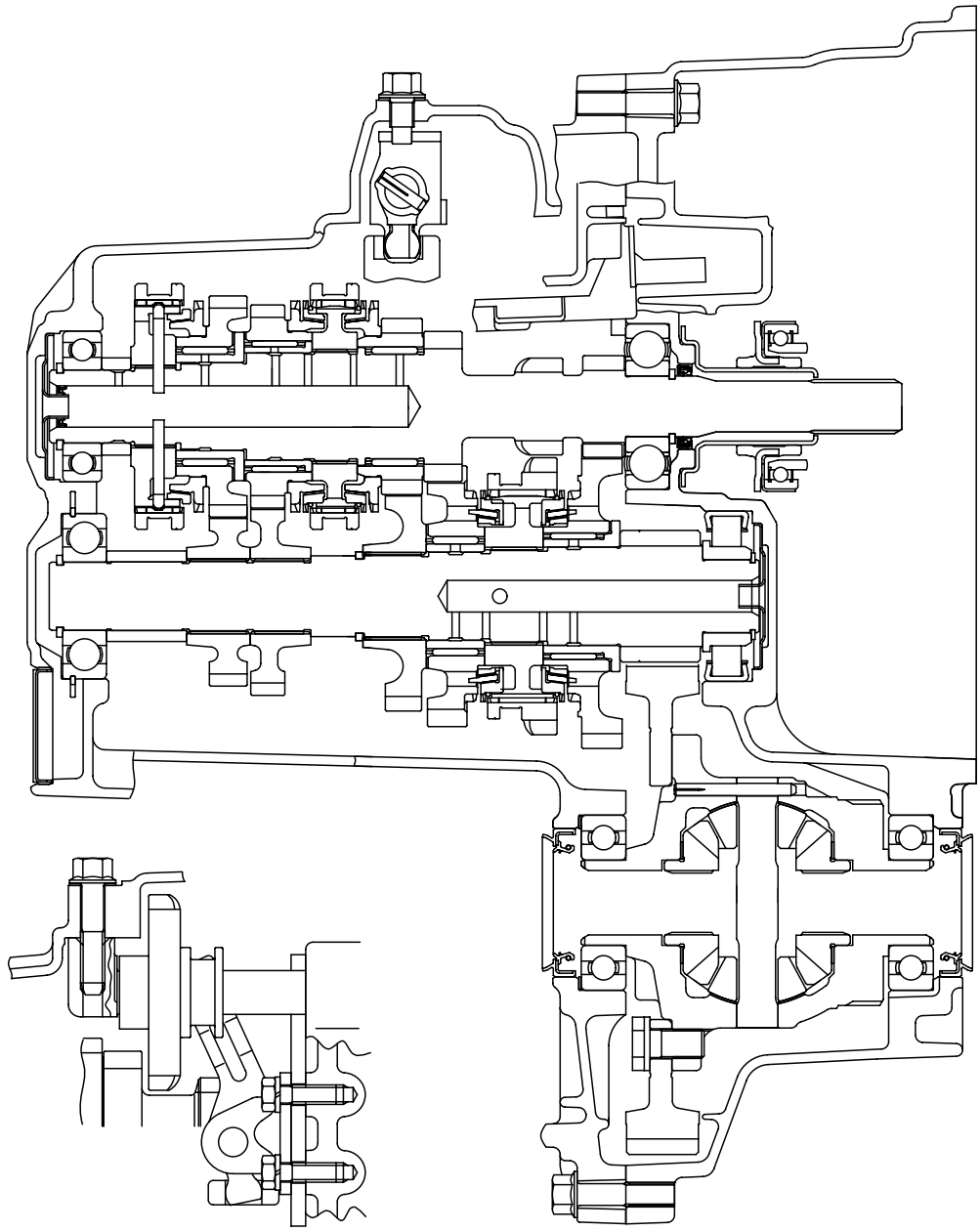
M1222000100120

MANUAL TRANSMISSION MODELS

Transmission model	Combined engine	Vehicle model
F5M41-1-V7B3	4G13-S4-MPI	CS1A
F5M41-1-R7B5	4G18-S4-MPI	CS3A/CS3W
F5M42-2-R7B4	4G63-D4-MPI	CS9W

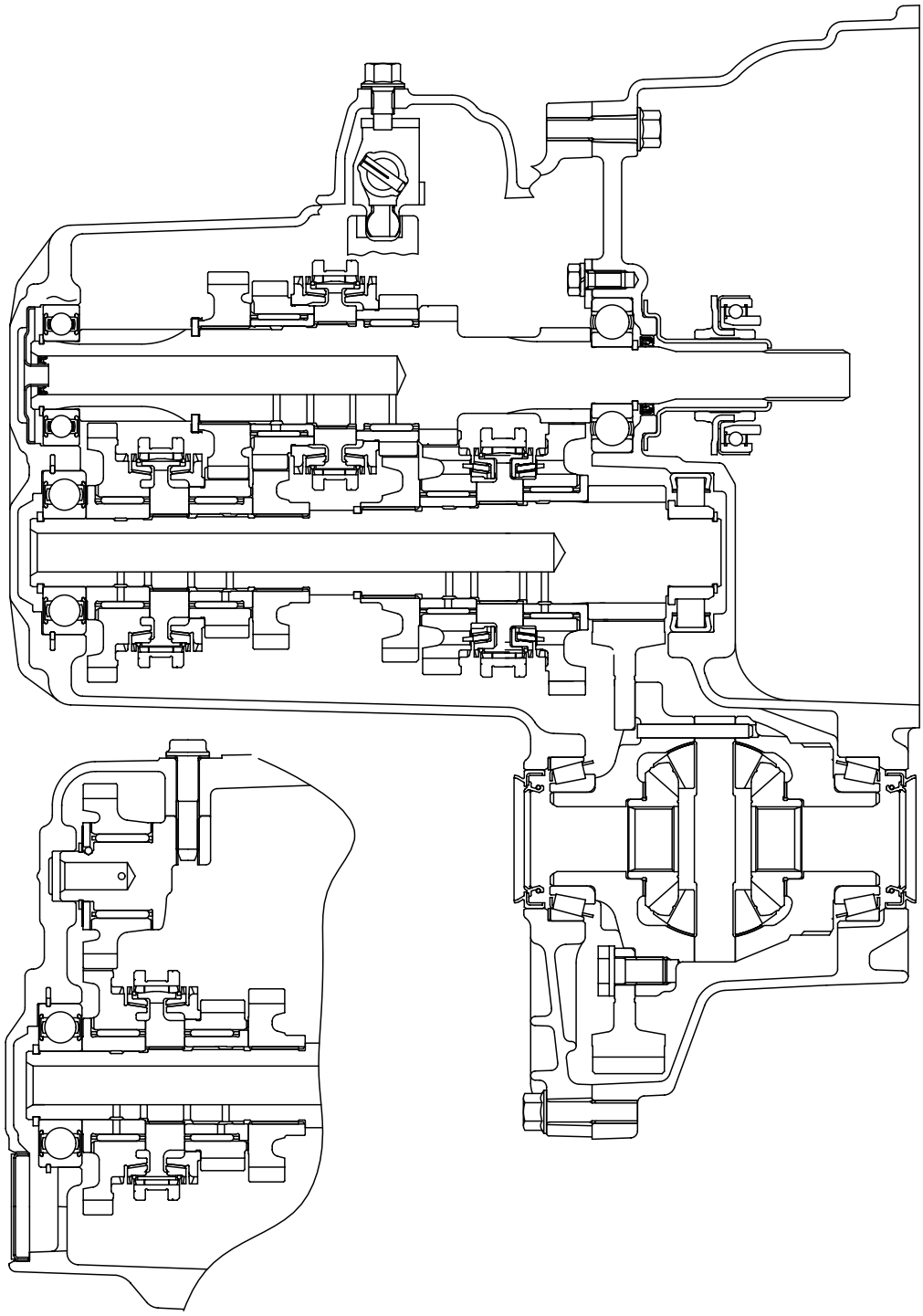
SECTIONAL VIEW

<F5M41>



AK300634

<F5M42>



AK300023

GENERAL SPECIFICATIONS

M1222000200161

TRANSMISSION MODEL TABLE

Transmission model	Speedomerter gear ratio	Final gear ratio	Vehicle model	Engine model
F5M41-1-V7B3	30/36	4.333	CS1A	4G13-S4-MPI
F5M41-1-R7B5	30/36	4.052	CS3A/CS3W	4G18-S4-MPI
F5M42-2-R7B4	30/36	4.058	CS9W	4G63-D4-MPI

GEAR RATIO TABLE

Item	F5M41	F5M42
1st	3.583	
2nd	1.947	
3rd	1.343	1.379
4th	0.976	1.030
5th	0.804	0.820
Reverse	3.416	3.363

SERVICE SPECIFICATIONS

M1222000300146

Item	Standard value	Minimum limit
Differential case preload <F5M41>	0.05 – 0.17 mm	–
Differential case preload <F5M42>	0.05 – 0.11 mm	–
Input shaft front bearing end play	0 – 0.12 mm	–
Input shaft 5th speed gear end play <F5M42>	0 – 0.09 mm	–
Input shaft rear bearing end play <F5M41>	0 – 0.09 mm	–
Input shaft rear bearing end play <F5M42>	0 – 0.12 mm	–
Synchronizer ring back surface to gear clearance	–	0.5 mm
Output shaft front bearing end play	0 – 0.12 mm	–
Output shaft 3rd speed gear end play	0 – 0.09 mm	–
Output shaft rear bearing end play	0 – 0.09 mm	–
Backlash between differential gear and pinion	0 – 0.15 mm	–

SNAP RING, SPACER AND THRUST PLATE FOR ADJUSTMENT

M1222012000153

SPACER (FOR ADJUSTMENT OF DIFFERENTIAL CASE PRELOAD) <F5M41>

Thickness mm	Identification symbol	Thickness mm	Identification symbol
0.77	77	1.31	E
0.86	86	1.40	None
0.95	95	1.49	C
1.04	04	1.58	B
1.13	D	1.67	A
1.22	G	1.76	F

SPACER (FOR ADJUSTMENT OF DIFFERENTIAL CASE PRELOAD) <F5M42>

Thickness mm	Identification symbol	Thickness mm	Identification symbol
0.71	71	1.01	01
0.74	74	1.04	04
0.77	77	1.07	07
0.80	80	1.10	J
0.83	83	1.13	D
0.86	86	1.16	K
0.89	89	1.19	L
0.92	92	1.22	G
0.95	95	1.25	M
0.98	98		

SNAP RING (FOR ADJUSTMENT OF INPUT SHAFT FRONT BEARING END PLAY)

Thickness mm	Identification symbol	Thickness mm	Identification symbol
2.24	None	2.38	Brown
2.31	Blue		

THRUST PLATE (FOR ADJUSTMENT OF INPUT SHAFT 5TH SPEED GEAR END PLAY) <F5M42>

Thickness mm	Identification symbol	Thickness mm	Identification symbol
2.82	0	2.98	6
2.86	2	3.02	7
2.90	3	3.06	8
2.94	5	3.10	9

SNAP RING (FOR ADJUSTMENT OF INPUT SHAFT REAR BEARING END PLAY) <F5M41>

Thickness mm	Identification symbol	Thickness mm	Identification symbol
2.31	Black (2)	2.55	Yellow
2.35	None	2.59	Black
2.39	Blue	2.63	Orange

Thickness mm	Identification symbol	Thickness mm	Identification symbol
2.43	Brown	2.67	Blue
2.47	Green	2.71	Brown
2.51	White		

SNAP RING (FOR ADJUSTMENT OF INPUT SHAFT REAR BEARING END PLAY) <F5M42>

Thickness mm	Identification symbol	Thickness mm	Identification symbol
1.43	Green (2)	1.59	Yellow (2)
1.51	White (2)		

SNAP RING (FOR ADJUSTMENT OF OUTPUT SHAFT FRONT BEARING END PLAY)

Thickness mm	Identification symbol	Thickness mm	Identification symbol
1.43	Green (2)	1.59	Yellow (2)
1.51	White (2)		

SNAP RING (FOR ADJUSTMENT OF OUTPUT SHAFT 3RD SPEED GEAR END PLAY)

Thickness mm	Identification symbol	Thickness mm	Identification symbol
2.81	Green	2.97	Orange
2.85	White	3.01	Red
2.89	Yellow	3.05	Pink
2.93	Black	3.09	Blue

SNAP RING (FOR ADJUSTMENT OF OUTPUT SHAFT REAR BEARING END PLAY) <F5M41>

Thickness mm	Identification symbol	Thickness mm	Identification symbol
2.31	Black (2)	2.55	Yellow
2.35	None	2.59	Black
2.39	Blue	2.63	Orange
2.43	Brown	2.67	Blue
2.47	Green	2.71	Brown
2.51	White		

SNAP RING (FOR ADJUSTMENT OF OUTPUT SHAFT REAR BEARING END PLAY) <F5M42>

Thickness mm	Identification symbol	Thickness mm	Identification symbol
2.31	Black (2)	2.55	Yellow
2.35	None	2.59	Black
2.39	Blue	2.63	Orange
2.43	Brown	2.67	Blue
2.47	Green	2.71	Brown
2.51	White		

SPACER (FOR ADJUSTMENT OF BACKLASH BETWEEN DIFFERENTIAL SIDE GEAR AND PINION) <F5M41>

Thickness mm	Identification symbol	Thickness mm	Identification symbol
0.72 – 0.79	–	0.98 – 1.02	–
0.80 – 0.84	–	1.02 – 1.06	–

Thickness mm	Identification symbol	Thickness mm	Identification symbol
0.85 – 0.90	–	1.07 – 1.11	–
0.90 – 0.94	–	1.12 – 1.16	–
0.94 – 0.98	–	1.16 – 1.20	–

SPACER (FOR ADJUSTMENT OF BACKLASH BETWEEN DIFFERENTIAL SIDE GEAR AND PINION) <F5M42>

Thickness mm	Identification symbol	Thickness mm	Identification symbol
0.75 – 0.82	–	1.05 – 1.12	–
0.83 – 0.92	–	1.09 – 1.16	–
0.93 – 1.00	–	1.15 – 1.22	–
1.01 – 1.08	–		

TORQUE SPECIFICATIONS

M1222012100116

Part	N·m
Roll stopper bracket mounting bolt	70 ± 10
Shift cable bracket mounting bolt	18 ± 3
Select lever mounting bolt	18 ± 3
Speedometer gear mounting bolt	3.9 ± 1.0
Backup light switch	32 ± 2
Restrict ball <F5M41>	32 ± 2
Poppet spring	32 ± 2
Harness bracket bolt	18 ± 3
Harness bracket bolt <F5M42>	3.9 ± 1.0
Interlock plate bolt	30 ± 3
Control housing mounting bolt	18 ± 3
Under cover mounting bolt <F5M42>	6.9 ± 0.9
Reverse idler gear shaft mounting bolt	48 ± 6
Clutch housing-transaxle case mounting bolt	44 ± 5
Reverse shift lever bolt <F5M41>	18 ± 3
Front bearing retainer mounting bolt	18 ± 3
Select lever mounting nut	11 ± 1
Stopper bracket mounting bolt	22.3 ± 0.3
Clutch release bearing retainer mounting bolt	9.8 ± 0.2
Differential drive gear mounting bolt	132 ± 5

SEALANTS AND ADHESIVES

M1222000500139

Item	Specified sealant
Clutch housing-transaxle case mating surface	MITSUBISHI Genuine sealant part No. MD997740 or equivalent
Under cover-transaxle case mating surface	
Control housing-transaxle case mating surface	
Air breather	3M SUPER WEATHERSTRIP No. 8001 or equivalent
Front bearing retainer bolt (countersink head bolt) <F5M41>	3M STUD Locking No. 4170 or equivalent
Differential drive gear bolt	

FORM-IN-PLACE GASKET (FIPG)

This transmission has several areas where the form-in-place gasket (FIPG) is used for sealing. To ensure that the FIPG fully serves its purpose, it is necessary to observe some precautions when applying it. Bead size, continuity and location are of paramount importance.

Too thin a bead could cause leaks. Too thick a bead, on the other hand, could be squeezed out of location, causing blocking or narrowing of fluid passages. To prevent leaks or blocking of passages, therefore, it is absolutely necessary to apply the FIPG evenly without a break, while observing the correct bead size.

FIPG hardens as it reacts with the moisture in the atmospheric air, and it is usually used for sealing metallic flange areas.

Disassembly

Parts sealed with a FIPG can be easily removed without need for the use of a special method. In some cases, however, the FIPG in joints may have to be broken by tapping parts with a mallet or similar tool.

Surface Preparation

Thoroughly remove all substances deposited on the FIPG application surface, using a gasket scraper. Make sure that the FIPG application surface is flat and smooth. Also make sure that the surface is free from oils, greases and foreign substances. Do not fail to remove old FIPG that may remain in the fastener fitting holes.

FIPG Application

Applied FIPG bead should be of the specified size and free of any break. FIPG can be wiped away unless it has completely hardened. Install the mating parts in position while the FIPG is still wet (in less than 10 minutes after application). Do not allow FIPG to spread beyond the sealing areas during installation. Avoid operating the transmission or letting oils or water come in contact with the sealed area before a time sufficient for FIPG to harden (approximately one hour) has passed.

FIPG application method may vary from location to location. Follow the instruction for each particular case described later in this manual.

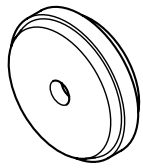
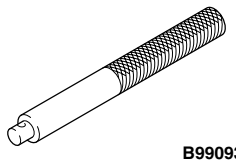
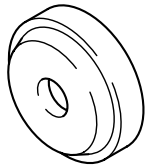
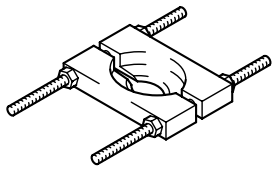
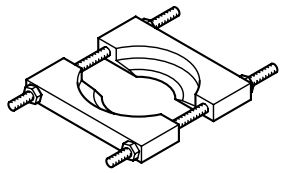
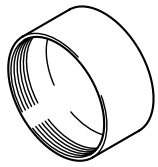
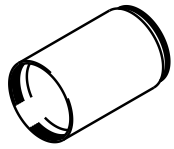
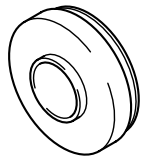
LUBRICANTS

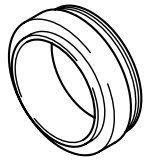
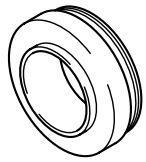
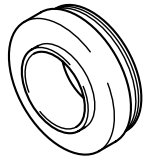
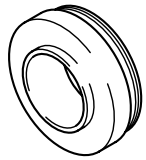
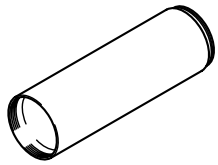
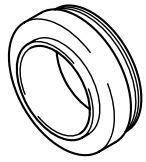
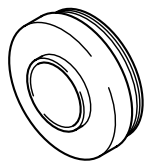
M1222000400109

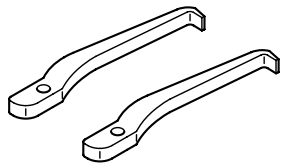
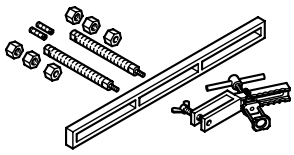
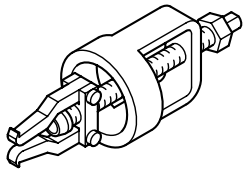
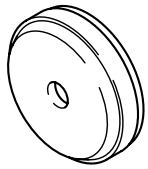
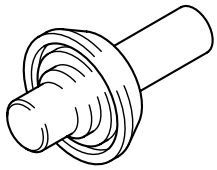
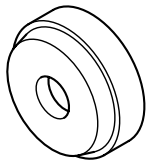
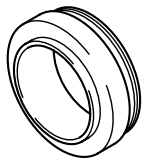
Item	Specified lubricant
Each O-ring	Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4
Each oil seal	
Select lever shoe	MITSUBISHI genuine grease part No.0101011 or equivalent

SPECIAL TOOLS

M1222000600158

Tool	Number	Name	Application
	MB990935	Installer adapter	Installation of differential case taper roller bearing outer race <F5M42>
 B990938	MB990938	Handle	Use with Installer adapter
	MB990927	Installer adapter	Installation of sealing cap
	MD998801	Bearing remover	Installation and removal of gears, bearings and sleeves
	MD998917	Bearing remover	Installation and removal of gears, bearing and sleeves
	MD998812	Installer cap	Use with Installer and Installer adapter
	MD998813	Installer-100	Use with Installer cap and Installer adapter
	MD998816	Installer adapter (30)	Installation of input shaft front bearing

Tool	Number	Name	Application
	MD998825	Installer adapter (52)	Installation of 1st-2nd speed synchronizer hub <F5M42>, 3rd-4th speed synchronizer hub and 1st speed gear sleeve <F5M42>
	MD998824	Installer adapter (50)	Installation of 4th speed gear sleeve, 5th speed gear <F5M42> and thrust plate stopper <F5M42>
	MD998820	Installer adapter (42)	Installation of 5th speed gear sleeve <F5M42>, 2nd speed gear sleeve <F5M41> and 3rd speed gear <F5M41>
	MD998819	Installer adapter (40)	Installation of 5th speed-reverse synchronizer hub, 4th speed gear, 5th speed gear sleeve <F5M42> and differential case ball bearing <F5M41>
	MD998818	Installer adapter (38)	Installation of input shaft rear bearing, roller bearing inner race, reverse gear sleeve <F5M42> and output shaft rear ball bearing <F5M42>
	MD998814	Installer-200	Use with Installer cap and Installer adapter
	MD998822	Installer adapter (46)	Installation of 1st gear sleeve <F5M41>, 1st-2nd speed synchronizer hub <F5M41>, 2nd speed gear sleeve <F5M42> and 3rd speed gear <F5M42>
	MD998817	Installer adapter (34)	Installation of output shaft rear ball bearing <F5M41>

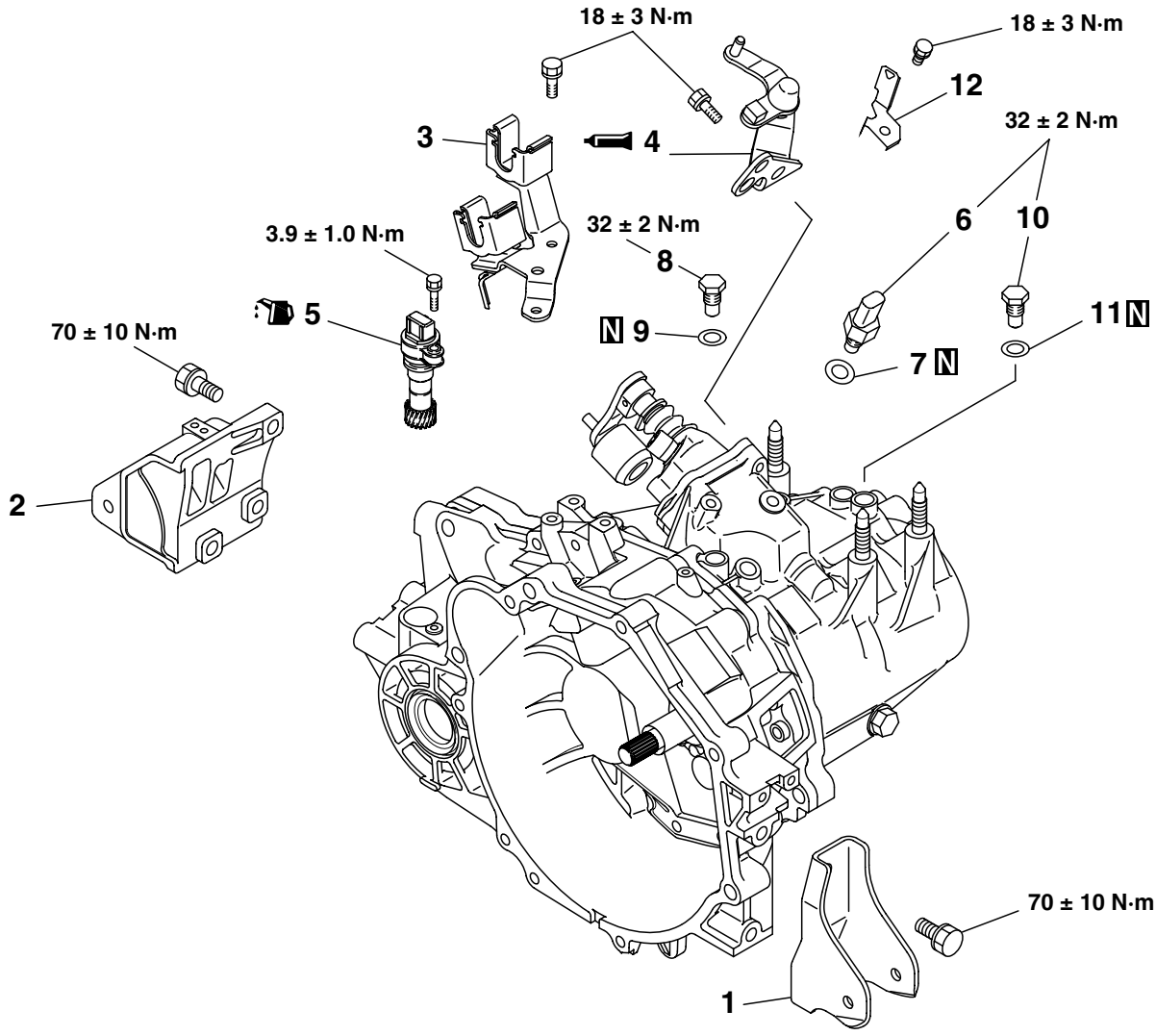
Tool	Number	Name	Application
	MD999566	Claw	Removal of taper roller bearing outer race
	MD998772	Valve spring compressor	Removal of output shaft front roller bearing outer race
	MD998346	Bearing outer race remover	Removal of output shaft front roller bearing outer race
	MB990934	Installer adapter	Installation of output shaft front roller bearing outer race
	MD998325	Differential oil seal installer	Installation of differential oil seal
	MB990926	Installer adapter	Installation of clutch housing input shaft oil seal
	MD998823	Installer adapter (48)	Installation of differential case taper roller bearing <F5M42>

TRANSMISSION

DISASSEMBLY AND REASSEMBLY

M1222001000159

<F5M41>



AK300215AB

Disassembly steps

1. Roll stopper bracket, front
2. Roll stopper bracket, rear
3. Shift cable bracket

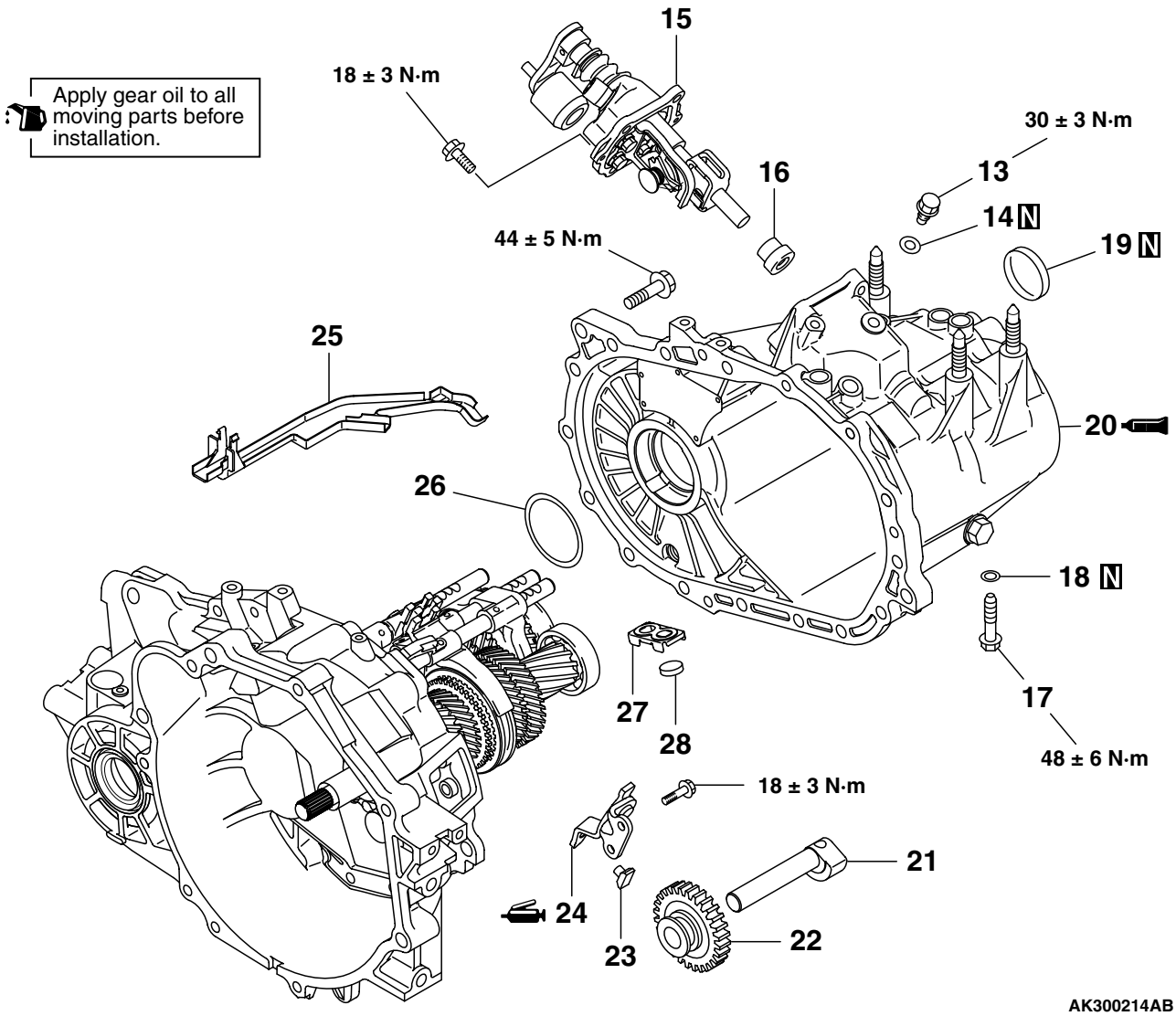
>>P<< 4. Select lever

>>O<< 5. Speedometer gear

6. Backup light switch
7. Gasket

Disassembly steps (Continued)

8. Restrict ball
9. Gasket
10. Poppet spring
11. Gasket
12. Harness bracket

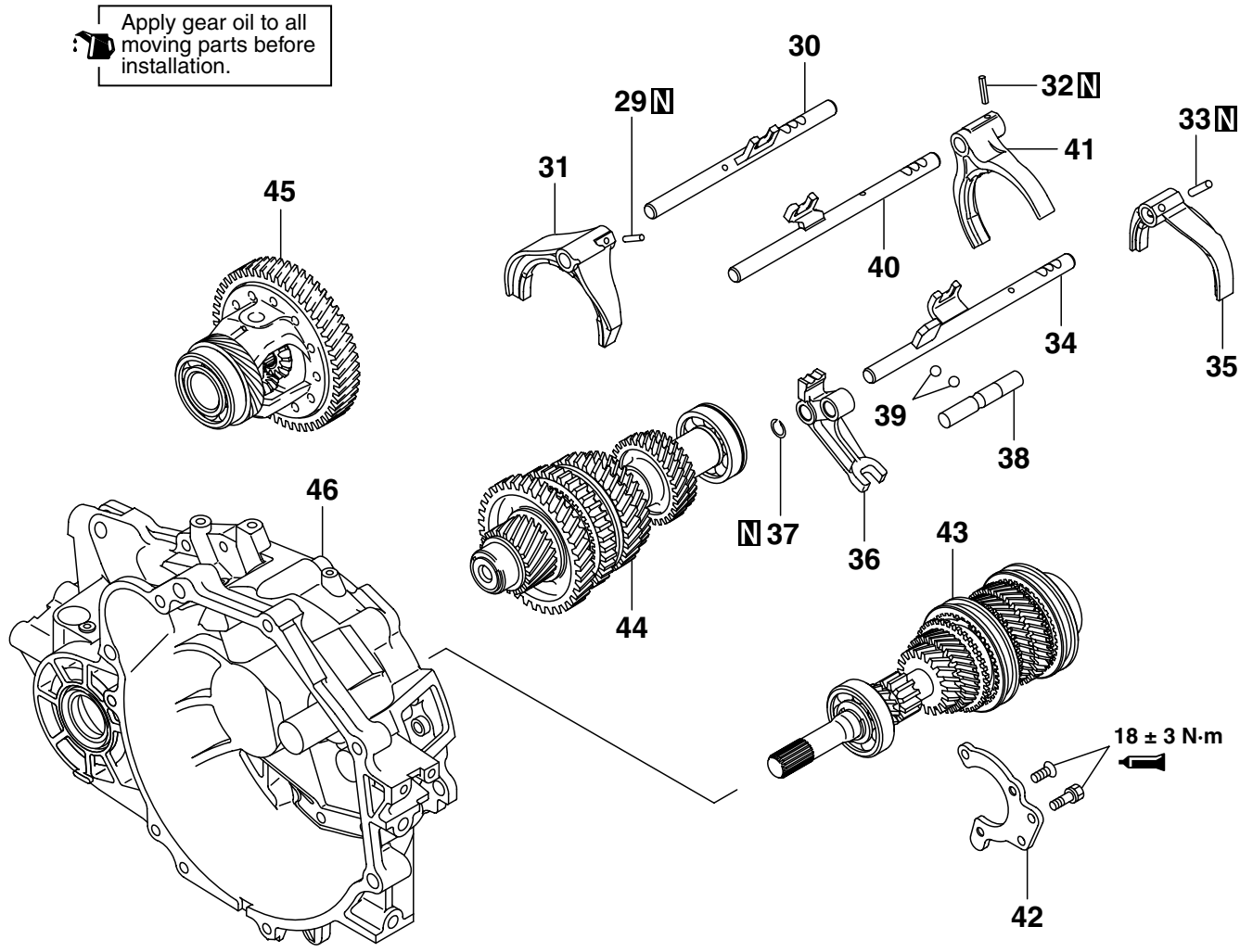


Disassembly steps

13. Interlock plate bolt
14. Gasket
>>N<< 15. Control housing
16. Neutral return spring
>>L<< 17. Reverse idler gear shaft bolt
18. Gasket
<<A>> >>K<< 19. Sealing cap
<<B>> >>J<< 20. Transaxle case
<<C>> >>I<< 21. Reverse idler gear shaft

Disassembly steps (Continued)

22. Reverse idler gear
23. Reverse shift lever shoe
24. Reverse shift lever
>>H<< 25. Oil guide
>>F<< 26. Spacer
27. Magnet holder
28. Magnet



AK300216AB

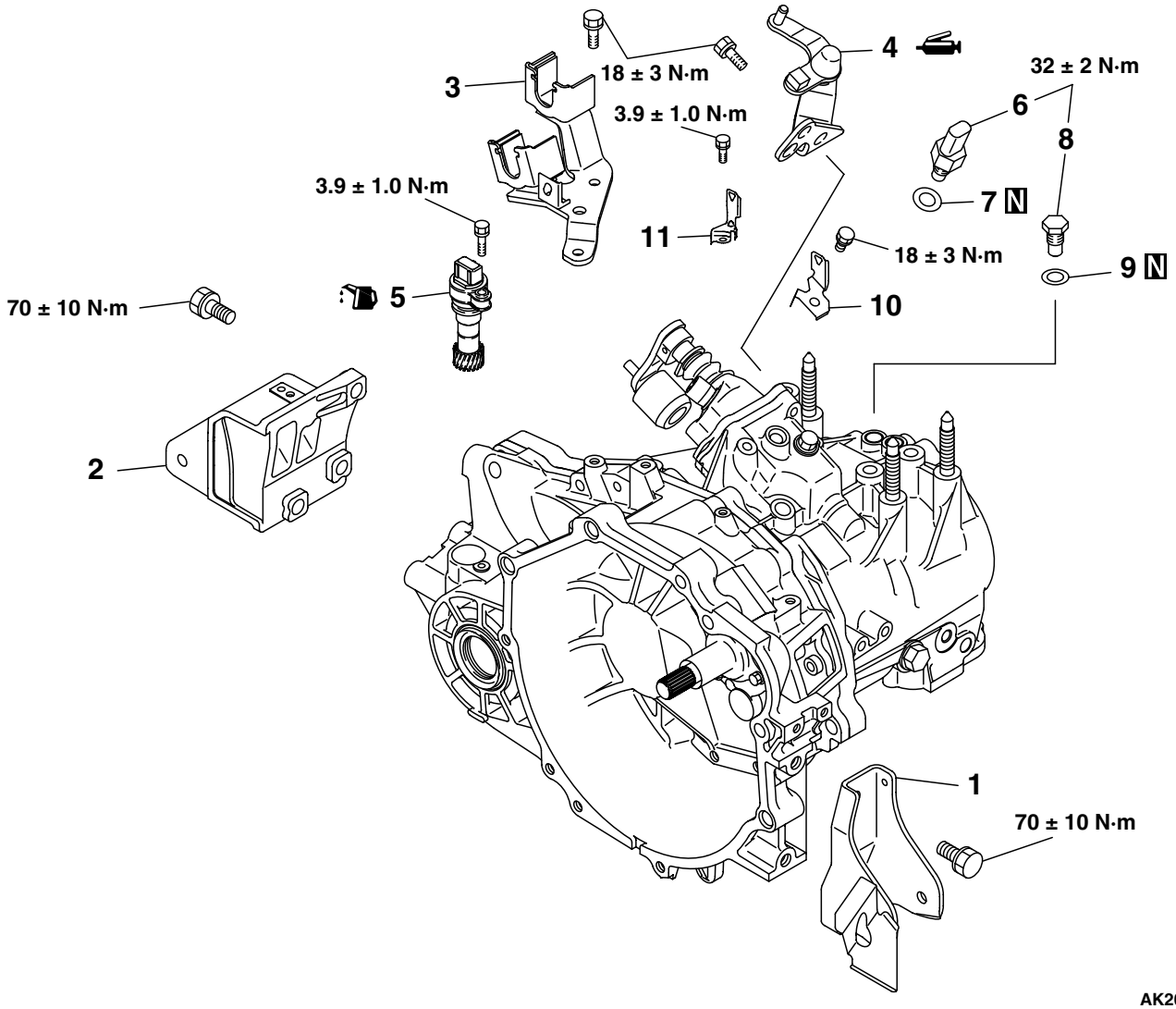
Disassembly steps

	>>E<<	29.	Spring pin
		30.	1st-2nd speed shift rail
		31.	1st-2nd speed shift fork
	>>E<<	32.	Spring pin
	>>E<<	33.	Spring pin
<<D>>	>>C<<	34.	5th speed-reverse shift rail
<<D>>	>>C<<	35.	5th speed-reverse shift fork
	>>C<<	36.	Reverse shift lug
	>>C<<	37.	Snap ring
	>>C<<	38.	Reverse interlock rail

Disassembly steps (Continued)

	>>C<<	39.	Steel ball
<<D>>	>>C<<	40.	3rd-4th speed shift rail
<<D>>	>>C<<	41.	3rd-4th speed shift fork
	>>B<<	42.	Front bearing retainer
<<F>>	>>A<<	43.	Input shaft
<<F>>	>>A<<	44.	Output shaft
		45.	Differential
		46.	Clutch housing

<F5M42>



Disassembly steps

1. Roll stopper bracket, front
2. Roll stopper bracket, rear
3. Shift cable bracket

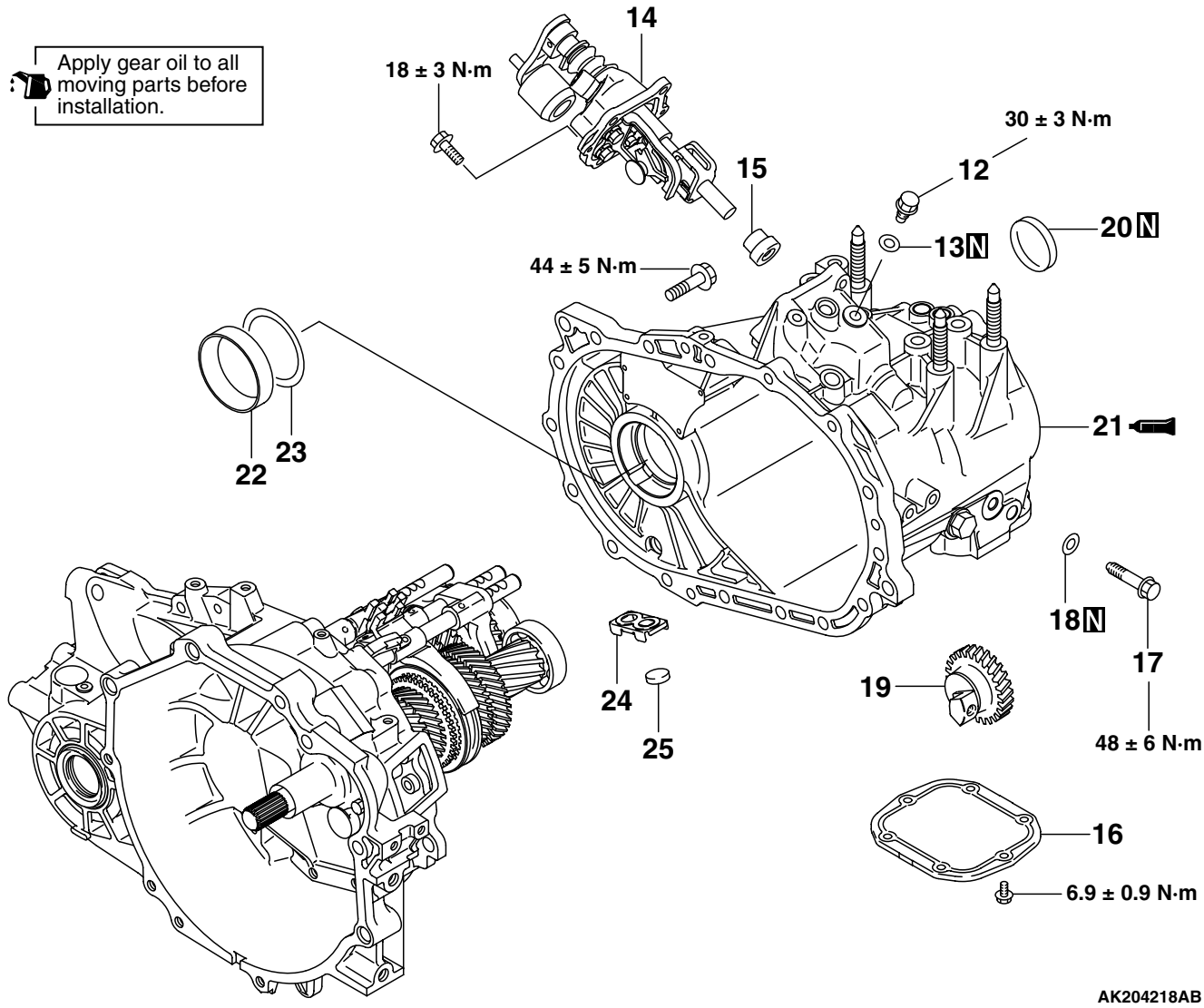
>>P<< 4. Select lever

>>O<< 5. Speedometer gear

6. Backup light switch
7. Gasket

Disassembly steps (Continued)

8. Poppet spring
9. Gasket
10. Harness bracket
11. Harness bracket

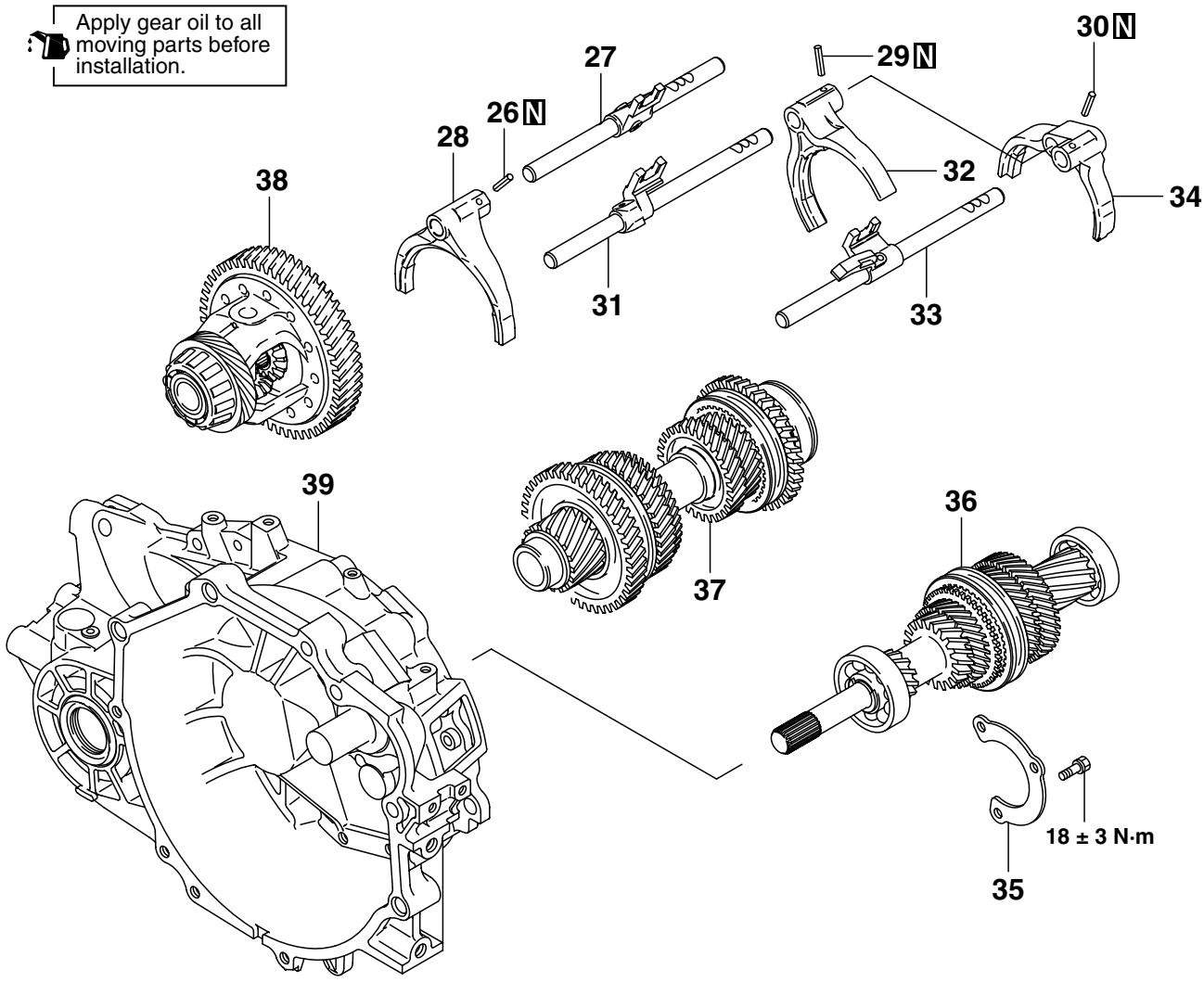


Disassembly steps

- 12. Interlock plate bolt
- 13. Gasket
- >>N<< 14. Control housing
- 15. Neutral return spring
- >>M<< 16. Under cover
- 17. Reverse idler gear shaft bolt
- 18. Gasket
- 19. Reverse idler gear assembly

Disassembly steps (Continued)

- <<A>> >>K<< 20. Sealing cap
- <<B>> >>J<< 21. Transaxle case
- >>G<< 22. Outer race
- >>G<< 23. Spacer
- 24. Magnet holder
- 25. Magnet



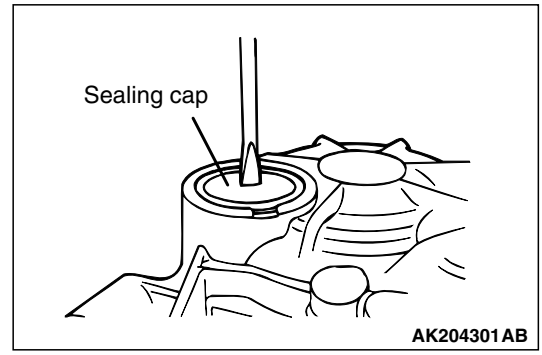
AK204219AB

Disassembly steps

	>>E<<	26.	Spring pin
		27.	1st-2nd speed shift rail
		28.	1st-2nd speed shift fork
	>>E<<	29.	Spring pin
	>>E<<	30.	Spring pin
<<E>>	>>D<<	31.	3rd-4th speed shift rail
<<E>>	>>D<<	32.	3rd-4th speed shift fork
<<E>>	>>D<<	33.	5th speed-reverse shift rail
<<E>>	>>D<<	34.	5th speed-reverse shift fork
		35.	Front bearing retainer
<<F>>	>>A<<	36.	Input shaft
<<F>>	>>A<<	37.	Output shaft
		38.	Differential
		39.	Clutch housing

DISASSEMBLY SERVICE POINTS

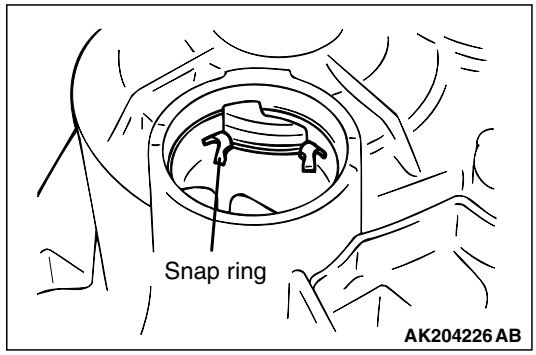
<<A>> SEALING CAP REMOVAL



1. Drive a screwdriver into the center of the sealing cap.
2. Bend the screwdriver back to remove the sealing cap.

<<B>> TRANSAXLE CASE REMOVAL

1. Remove all sixteen bolts securing the transaxle case to the clutch housing.

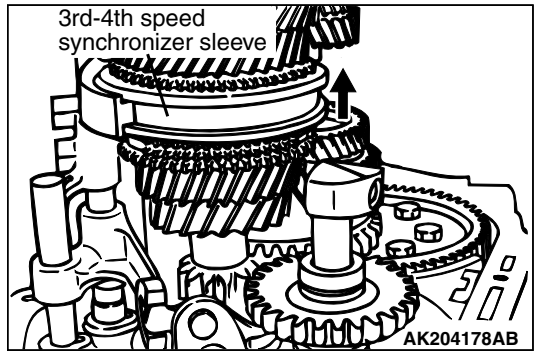


2. Use snap ring pliers to expand the indicated snap ring. The snap ring will release the grooved ball bearing, and the output shaft assembly will fall under its own weight.

⚠ CAUTION
Do not use a scraper or chisel to remove the transaxle case.

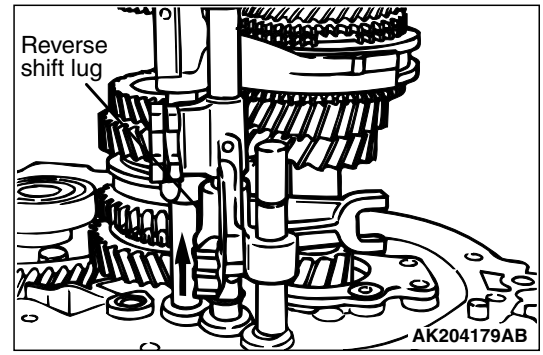
3. Remove the transaxle case from the clutch housing by gently prying on opposite sides at the same time.

<<C>> REVERSE IDLER GEAR SHAFT REMOVAL

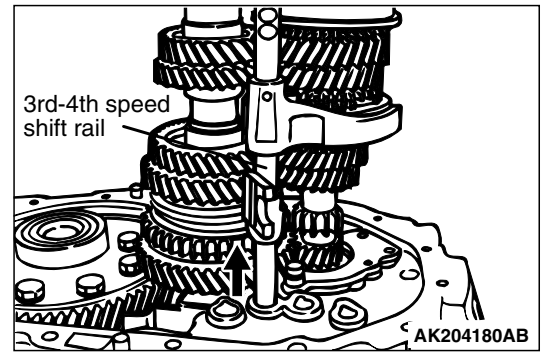


1. Shift the 3rd-4th speed synchronizer sleeve toward the 4th speed side.

<<D>> 3RD-4TH SPEED SHIFT RAIL/3RD-4TH SPEED SHIFT FORK/5TH SPEED-REVERSE SHIFT RAIL/5TH SPEED-REVERSE SHIFT FORK REMOVAL



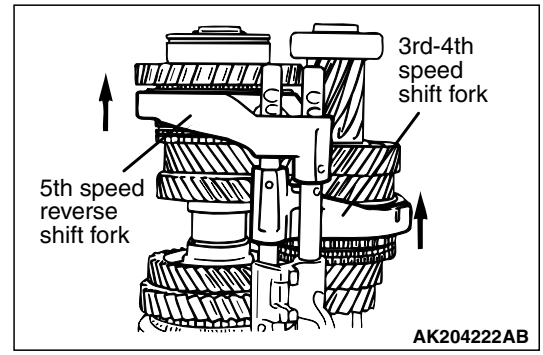
1. While sliding the reverse shift lug in the direction shown, remove the 5th speed shift fork, 5th speed shift rail, reverse shift lug, snap ring, steel ball and reverse interlock rail.



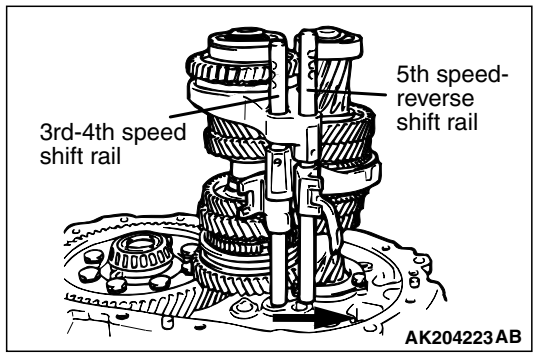
2. While sliding the 3rd-4th speed shift rail in the direction shown, remove it together with the shift fork.

<<E>> 3RD-4TH SPEED SHIFT RAIL/3RD-4TH SPEED SHIFT FORK/5TH SPEED-REVERSE SHIFT RAIL/5TH SPEED-REVERSE SHIFT FORK REMOVAL

1. Shift the 3rd-4th speed shift fork and 5th speed-reverse shift fork in the direction shown.

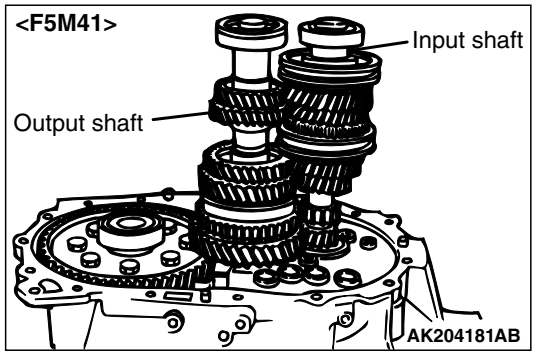


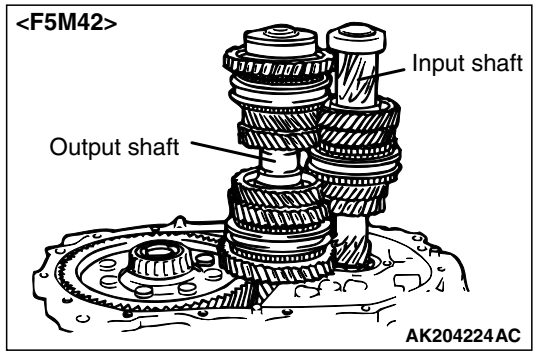
2. Pull up on the 3rd-4th speed shift rail and 5th speed-reverse shift rail and take them out of the hole in the clutch housing.



3. Slide the 3rd-4th speed shift rail and 5th speed-reverse shift rail in the direction shown and remove them together with the shift forks.

<<F>> INPUT SHAFT AND OUTPUT SHAFT REMOVAL

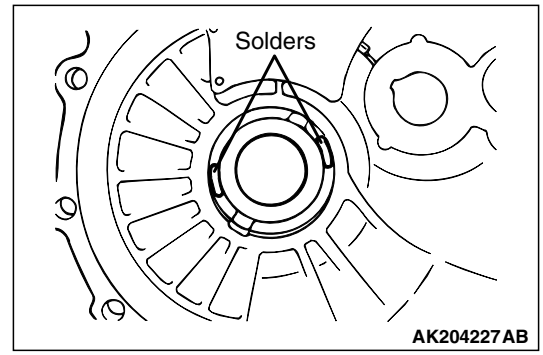




Remove the input and output shafts together.

ADJUSTMENT BEFORE REASSEMBLY

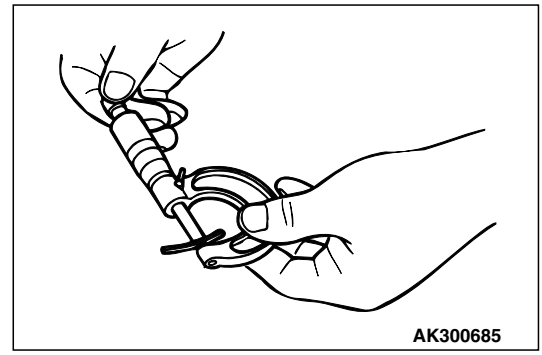
SPACER SELECTION FOR DIFFERENTIAL CASE PRELOAD ADJUSTMENT



1. Put solders (1.6 mm diameter, about 10 mm long) in the illustrated positions of the transaxle case.
2. Install the taper bearing outer race and differential assembly into the transaxle case.

   NOTE: If necessary, replace the differential case and taper bearing before carrying out these adjustments.
3. Install the clutch housing and tighten the bolts to the specified torque.

   Tightening torque: 44 ± 5 N·m
4. Remove the clutch housing, and then remove the differential assembly.
5. Remove the outer race and take out crushed solders.

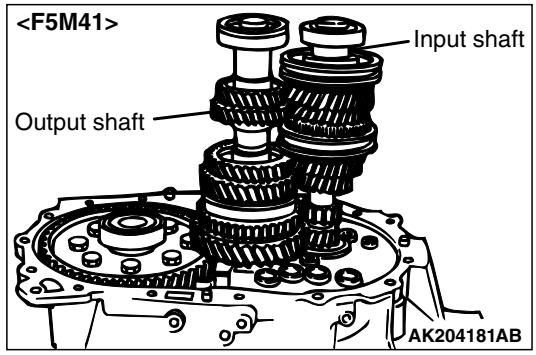


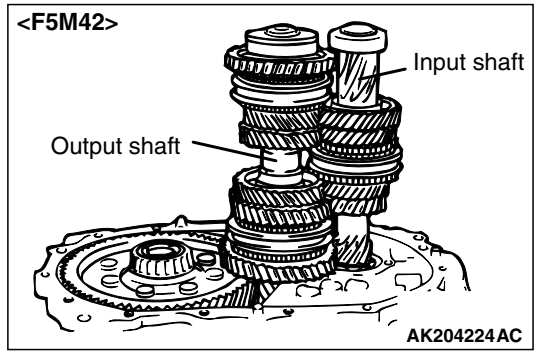
6. Measure the thickness of the crushed solder with a micrometer and select a spacer that will provide the standard preload value.

   Standard value:
   0.05 – 0.17 mm preload <F5M41>
   0.05 – 0.11 mm preload <F5M42>

REASSEMBLY SERVICE POINTS

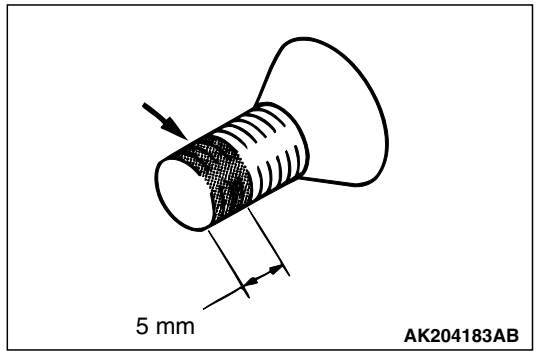
>>A<< OUTPUT SHAFT/INPUT SHAFT INSTALLATION





Install the input and output shafts together.

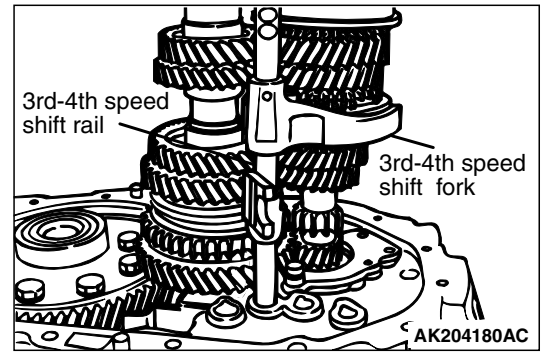
>>B<< FRONT BEARING RETAINER INSTALATION



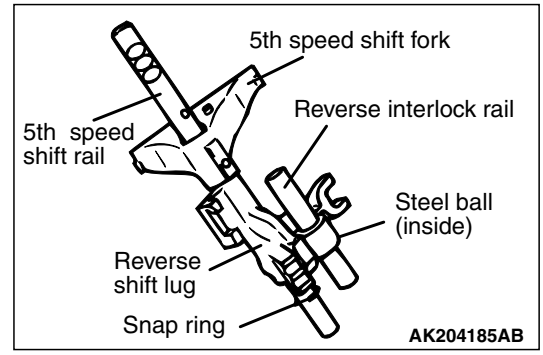
Apply a sealant to the front bearing retainer mounting bolts (countersunk bolts only).

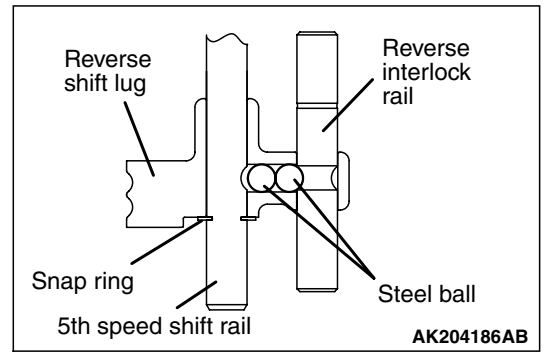
3M STUD Locking NO. 4170 or equivalent

>>C<< REVERSE INTERLOCK RAIL/STEEL BALL/5TH SPEED-REVERSE SHIFT RAIL/ REVERSE SHIFT LUG/SNAP RING/5TH SPEED-REVERSE SHIFT FORK/3RD-4TH SPEED SHIFT FORK/3RD-4TH SPEED SHIFT RAIL INSTALLATION

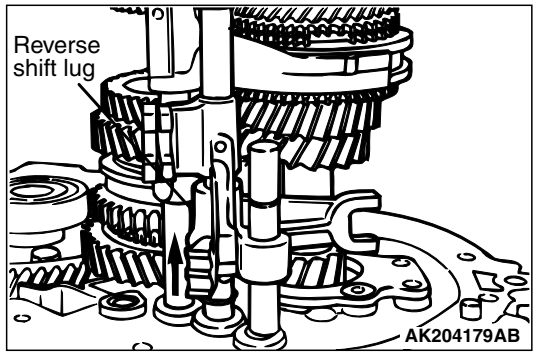


1. Install the 3rd-4th shift rail and fork.



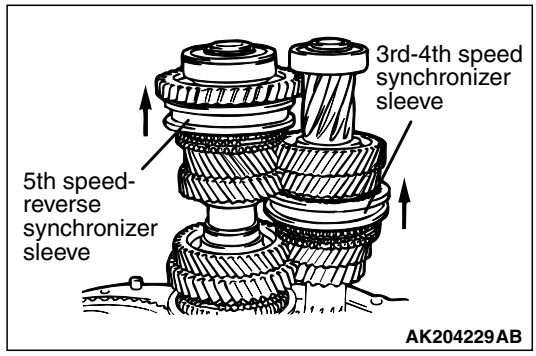


2. Install the reverse interlock rail, stell ball, 5th speed shift rail, 5th spped shift rork, reverse shift lug and snap ring in the illustrated positions.

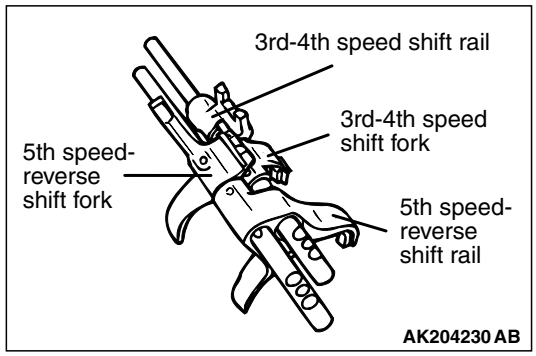


3. While sliding the reverse shift lug in the direction shown, install the 5th speed shift fork, 5th speed shift rail, reverse shift lug, snap ring, steel ball and reverse interlock rail.

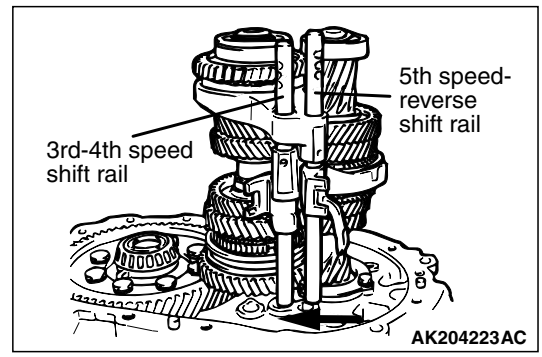
>>D<< 5TH SPEED-REVERSE SHIFT FORK/5TH SPEED-REVERSE SHIFT RAIL/3RD-4TH SPEED SHIFT FORK/3RD-4TH SPEED SHIFT RAIL INSTALLATION



1. Shift the 3rd-4th speed synchronizer sleeve and 5th speed-reverse synchronizer sleeve in the direction shown.



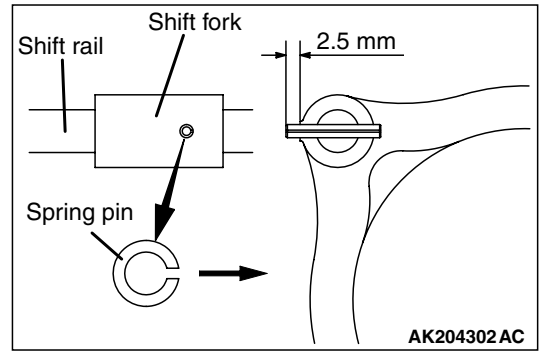
2. Assemble the 3rd-4th speed shift rail and fork, and the 5th speed-reverse shift rail and fork.



3. While fitting each shift fork in the groove of synchronizer sleeve, slide the shift rails in the direction shown and install.
4. Insert the 3rd-4th speed shift rail and 5th speed-reverse shift rail into the rail hole in the clutch housing.

>>E<< SPRING PIN INSTALLATION

1. Align the pin holes in the shift rail and shift fork.



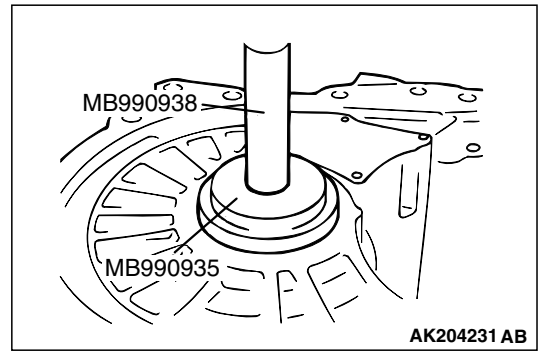
2. Insert the new spring pin. Push it in as shown so that the slit and center axis of the rail are aligned.

>>F<< SPACER INSTALLATION

Install the spacer selected in the section "ADJUSTMENT BEFORE REASSEMBLY."

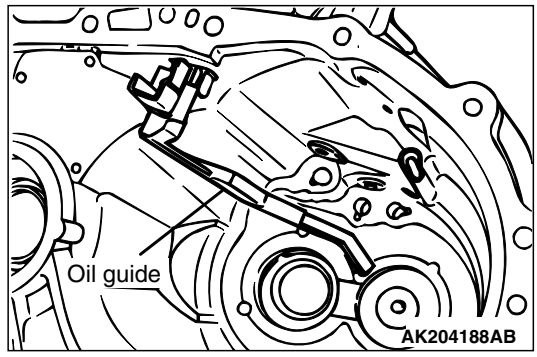
>>G<< SPACER AND OUTER RACE INSTALLATION

1. Install the spacer selected in the section "ADJUSTMENT BEFORE REASSEMBLY."



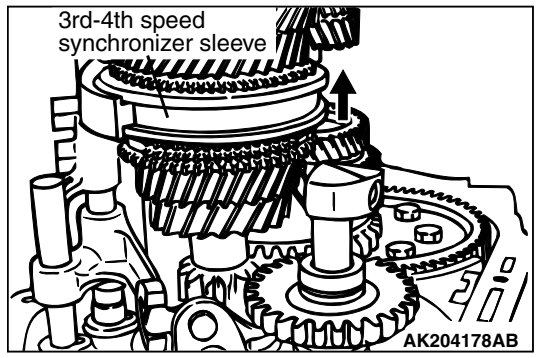
2. Using special tools, press the outer race into the transaxle case.
   - Installer adapter (MB990935)
   - Handle (MB990938)

>>H<< OIL GUIDE INSTALLATION

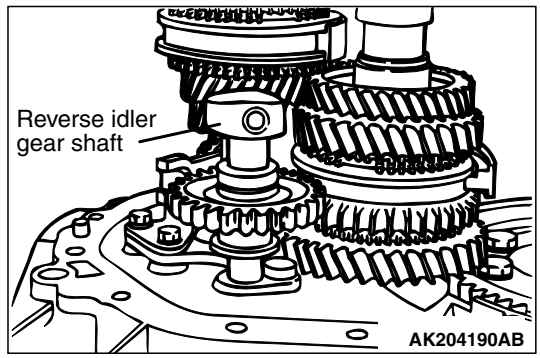


install the oil guide as shown in the illustration.

<<I>> REVERSE IDLER GEAR SHAFT INSTALLATION



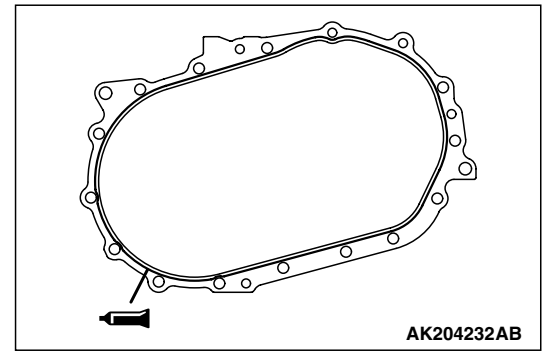
1. Shift the 3rd-4th speed synchronizer sleeve toward the 4th speed side.



2. Face the threaded hole of the reverse idler gear shaft toward the direction shown.

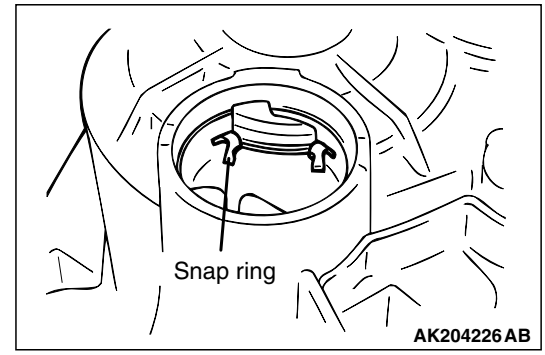
>>J<< TRANSAXLE CASE INSTALLATION

⚠ CAUTION
Squeeze sealant evenly onto the transaxle housing. Do not leave gaps or excess amounts, otherwise oil leaks are likely.



1. Apply a 2 mm diameter bead of sealant (Mitsubishi Genuine Part number MD997740 or equivalent) as illustrated onto the transaxle case.

   NOTE: Be sure to install the transaxle case onto the transaxle housing while the sealant is still wet (within 15 minutes).



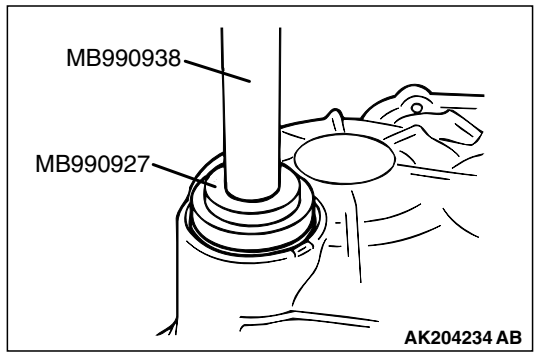
2. Align the transaxle case and expand the snap ring. After the case is on far enough for the snap ring to ride on the bearing, release the snap ring. Push down on the transaxle case, twisting it from side to side until the case contacts the housing.
3. Tighten the transaxle case mounting bolts to the specified torque.

   Tightening torque: 44 ± 5 N·m

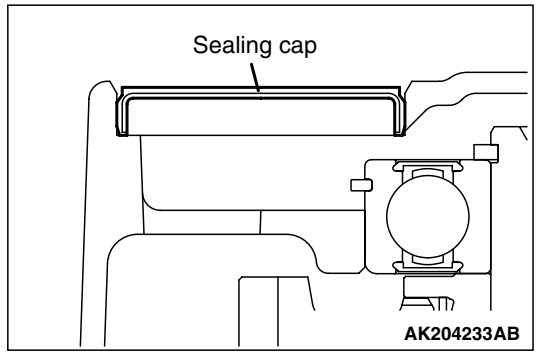
4. Place the transaxle upside down and let the snap ring fit in the groove by the output shaft's own weight.

   NOTE: After installation, keep the sealed area away from oil for approximately one hour.

>>K<< SEALING CAP INSTALLATION

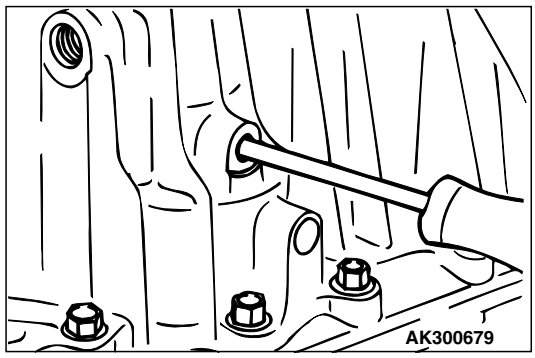


1. Using special tools, press install the sealing cap onto the case.
   - Installer adapter (MB990927)
   - Handle (MB990938)



2. Evenly press the sealing cap so it is fully seated and not at an angle.

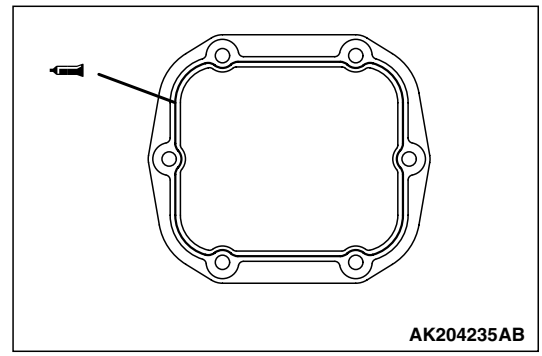
>>L<< REVERSE IDELER GEAR SHAFT BOLT INSTALLATION



Using a Phillips screwdriver (8 mm in shank diameter) center the bolt hole.

>>M<< UNDER COVER INSTALLATION

⚠ CAUTION
Squeeze sealant onto the case. Do not leave gaps or excess amounts, otherwise oil leaks are likely.



1. Apply a 2 mm diameter bead of sealant (Mitsubishi Genuine Part number MD997740 or equivalent) as illustrated onto the under cover.

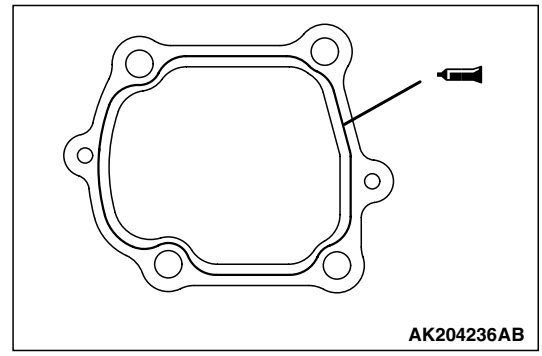
   NOTE: Be sure to install the under cover to the case quickly while the sealant is still wet (within 15 minutes).
2. Install the under cover to the transaxle case and tighten the bolts to specified torque.

   Tightening torque: 6.9 ± 0.9 N·m

   NOTE: After installation, keep the sealed area away from oil for approximately one hour.

>>N<< CONTROL HOUSING INSTALLATION

⚠ CAUTION
Squeeze sealant onto the case. Do not leave gaps or excess amounts, otherwise oil leaks are likely.



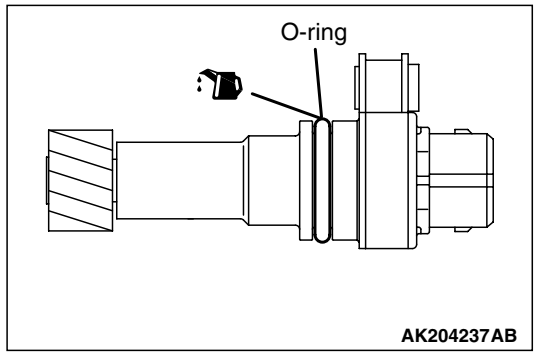
1. Apply a 0.2 mm diameter bead of sealant (Mitsubishi Genuine Part number MD997740 or equivalent) as llustrated onto the control housing.

   NOTE: Be sure to install the housig to the case quickly while the sealant is still wet (within 15 minutes).
2. Install the control housing to the transaxle case and tighten the bolts to specified torque.

Tightening torque: 18 ± 3 N·m

NOTE: After installation, keep the sealed area away from the oil for approximately one hour.

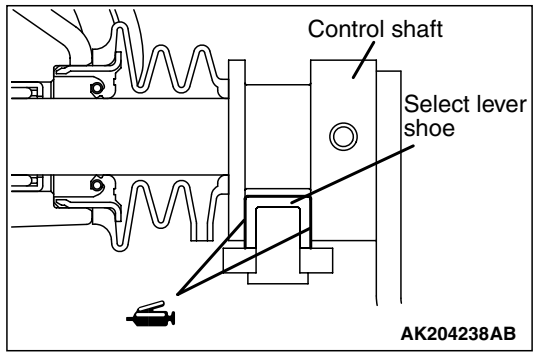
>>O<< SPEEDOMETER GEAR INSTALLATION



1. Apply gear oil (Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4) to the O-ring of the speedometer gear. Install into the transaxle housing.
2. Tighten the bolt to specified torque.

Tightening torque: 3.9 ± 1.0 N·m

>>P<< SELECT LEVER INSTALLATION



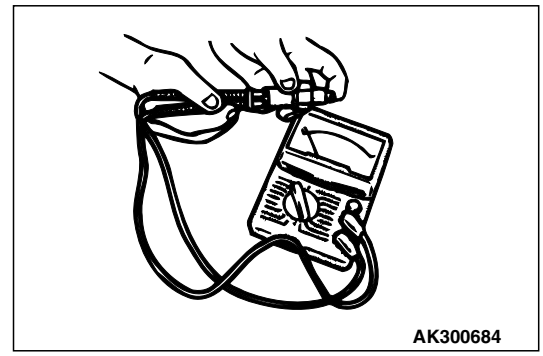
1. Apply grease (Mitsubishi Genuine Part number 0101011 or equivalent) to the control shaft sliding portion of the select lever shoe.
2. Install the select lever and tighten the bolts to specified torque.

Tightening torque: 18 ± 3 N·m

INSPECTION

M1222001100134

BACKUP LIGHT SWITCH



Check for continuity between terminals.

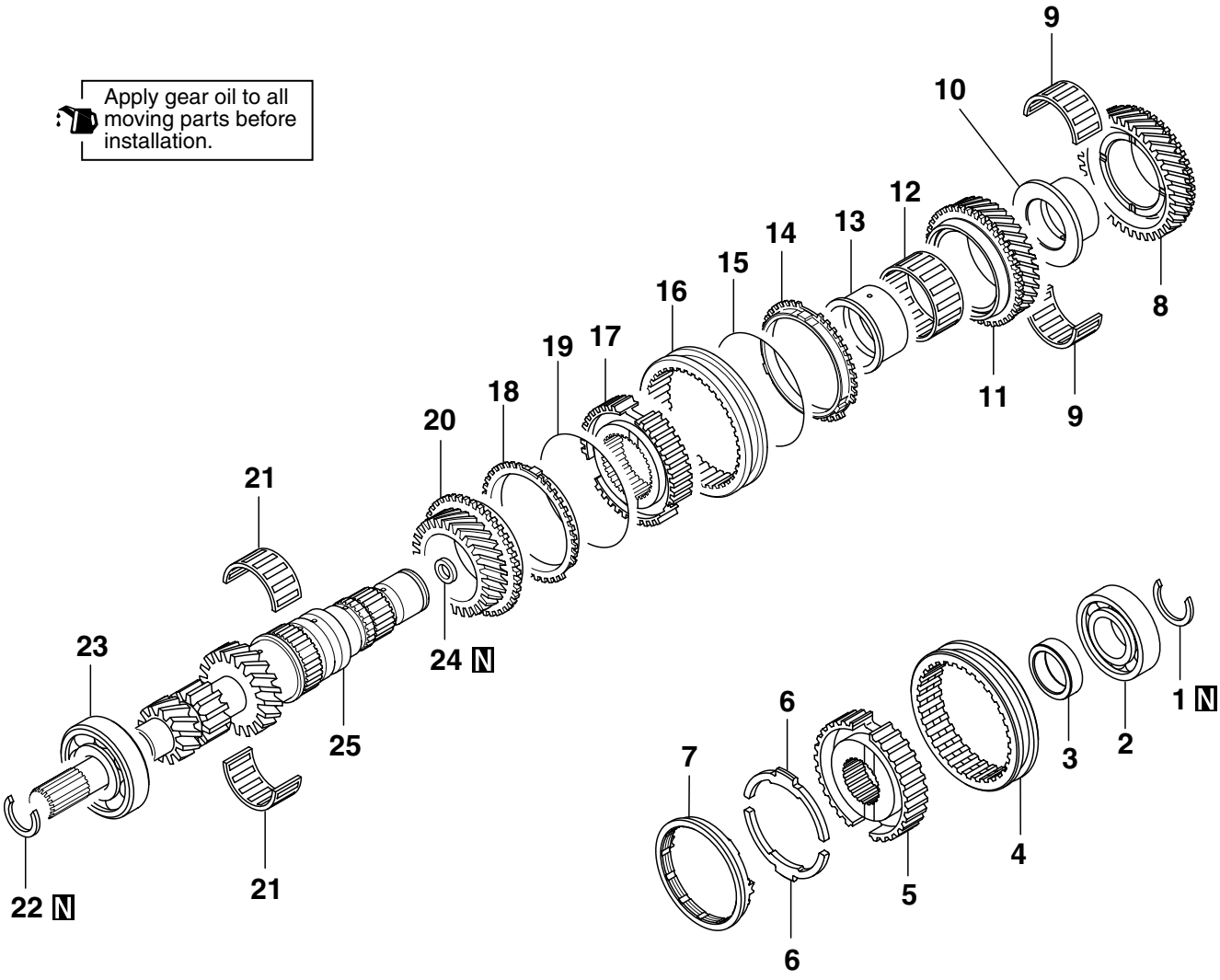
SWITCH CONDITION	CONTINUITY
Pressed	Open
Released	Conductive

INPUT SHAFT

DISASSEMBLY AND REASSEMBLY

M1222001600140

<F5M41>



AK300291AB

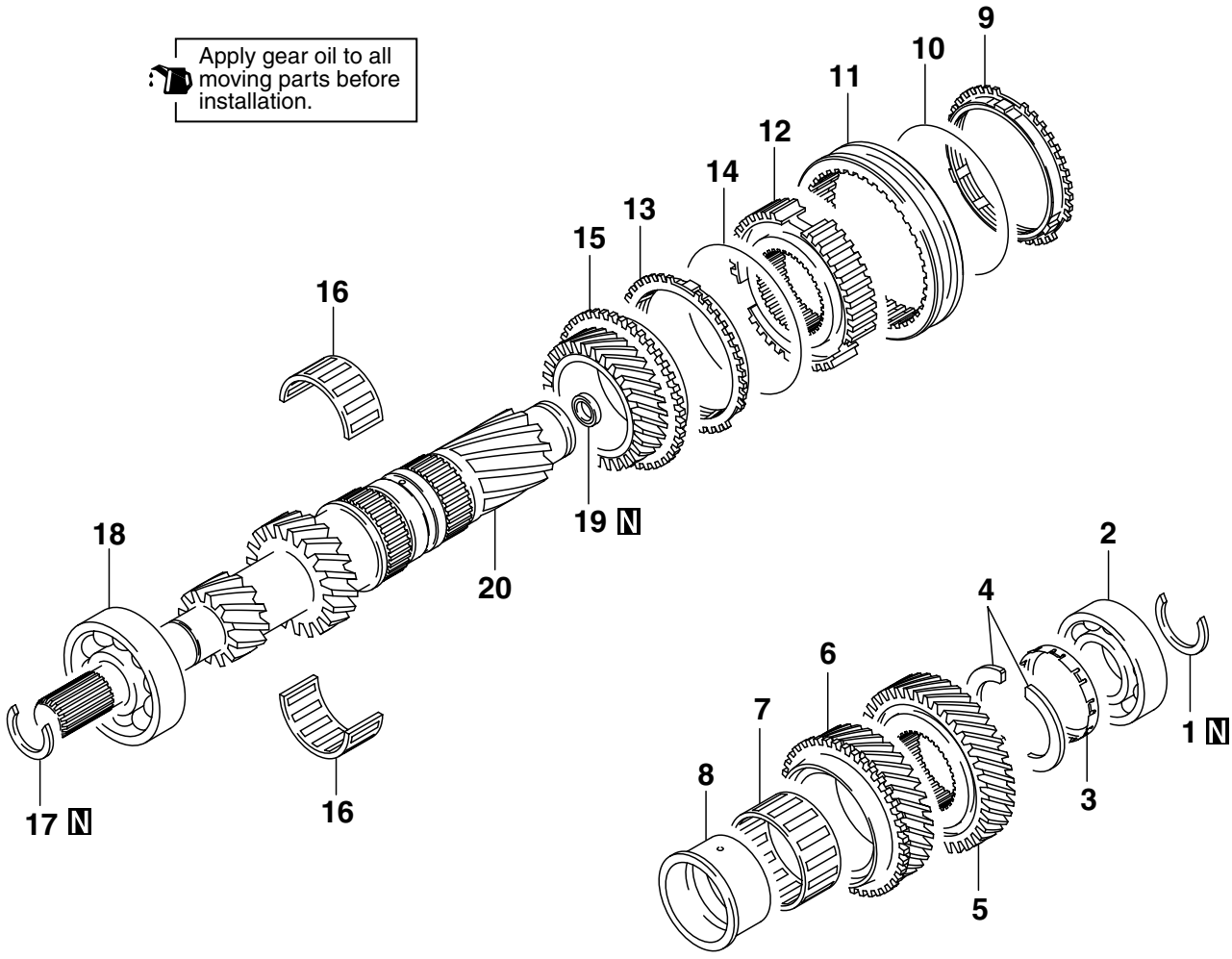
DIsassembly steps

	>>P<<	1.	Snap ring
<<A>>	**>>O<<**	2.	Ball bearing
		3.	Input collar
	>>N<<	4.	Synchronizer sleeve
<<B>>	**>>M<<**	5.	5th speed-reverse synchronizer hub
		6.	Synchronizer lever
		7.	Synchronizer ring
		8.	5th speed gear
		9.	Needle roller bearing
<<C>>	**>>I<<**	10.	5th speed gear sleeve
		11.	4th speed gear
		12.	Needle roller bearing

DIsassembly steps (Continued)

<<F>>	**>>H<<**	13.	4th speed gear sleeve
	>>E<<	14.	Synchronizer ring
	>>D<<	15.	Synchronizer spring
	>>G<<	16.	Synchronizer sleeve
	>>F<<	17.	3rd-4th speed synchronizer hub
	>>E<<	18.	Synchronizer ring
	>>D<<	19.	Synchronizer spring
		20.	3rd speed gear
		21.	Needle roller bearing
	>>C<<	22.	Snap ring
<<G>>	**>>B<<**	23.	Ball bearing
	>>A<<	24.	Oil seal
		25.	Input shaft

<F5M42>



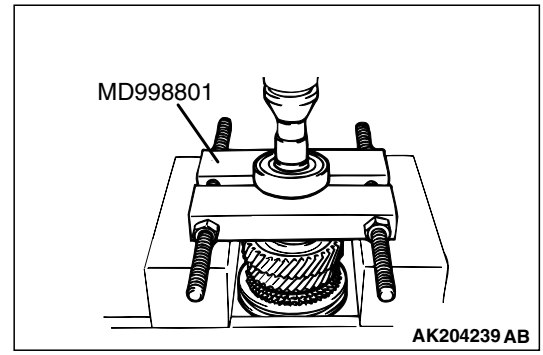
AK204391AB

Disassembly steps

	>>P<<	1.	Snap ring
<<A>>	>>O<<	2.	Ball bearing
<<D>>	>>L<<	3.	Thrust plate stopper
	>>K<<	4.	Thrust plate
<<E>>	>>J<<	5.	5th speed gear
		6.	4th speed gear
		7.	Needle roller bearing
<<F>>	>>H<<	8.	4th speed gear sleeve
	>>E<<	9.	Synchronizer ring
	>>D<<	10.	Synchronizer spring
	>>G<<	11.	Synchronizer sleeve
	>>F<<	12.	3rd-4th speed synchronizer hub
	>>E<<	13.	Synchronizer ring
	>>D<<	14.	Synchronizer spring
		15.	3rd speed gear
		16.	Needle roller bearing
	>>C<<	17.	Snap ring
<<G>>	>>B<<	18.	Ball bearing
	>>A<<	19.	Oil seal
		20.	Input shaft

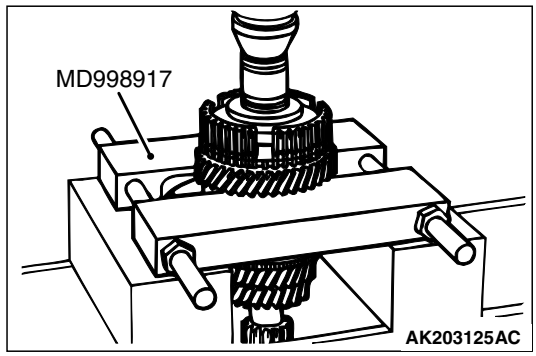
DISASSEMBLY SERVICE POINTS

<<A>> BALL BEARING REMOVAL



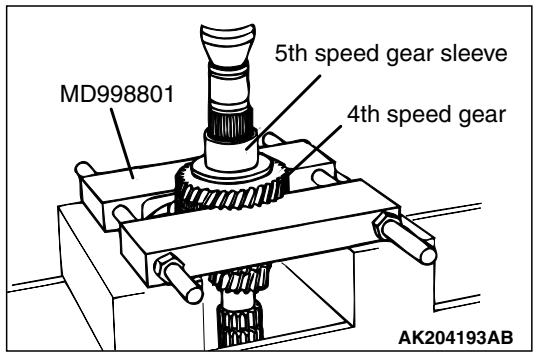
1. Using special tool Bearing remover (MD998801), support the ball bearing, and then set them on the press.
2. Push down on the input shaft with the press and remove the ball bearing.

<<B>> 5TH SPEED-REVERSE SYNCHRONIZER HUB REMOVAL



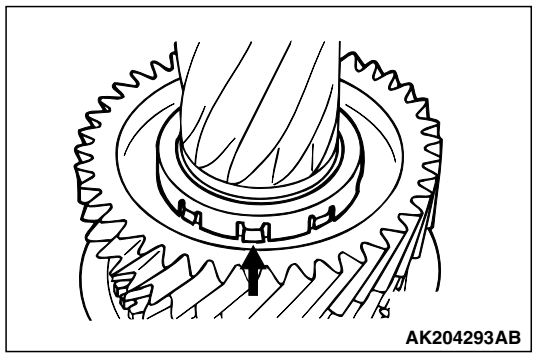
1. Using special tool Bearing remover (MD998917), support the 5th speed gear, and then set them on the press.
2. Push down on the input shaft with the press and remove the 5th speed-reverse synchronizer hub.

<<C>>5TH SPEED GEAR SLEEVE REMOVAL



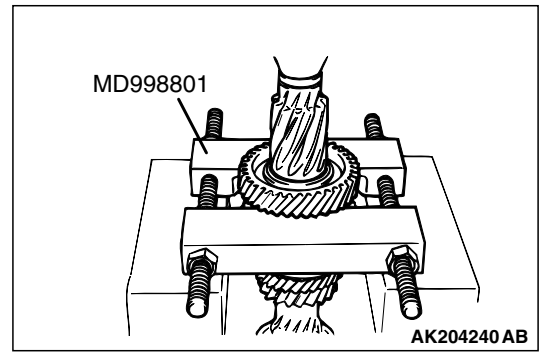
1. Using special tool Bearing remover (MD998801), support the 4th speed gear, and then set them on the press.
2. Push down on the input shaft with the press and remove the 5th speed gear sleeve.

<<D>> THRUST PLATE STOPPER REMOVAL



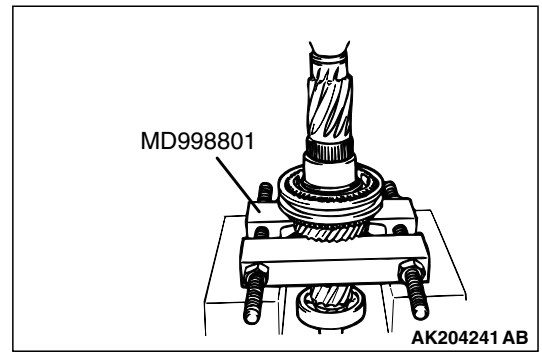
Using a screwdriver, pry up at the position shown in the illustration and remove the thrust plate stopper.

<<E>>5TH SPEED GEAR REMOVAL



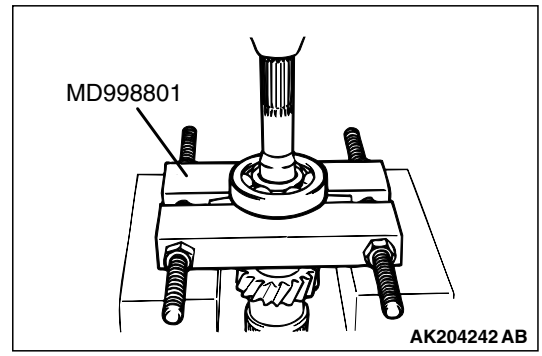
1. Using special tool Bearing remover (MD998801), support the 5th speed gear, and then set them on the press.
2. Push down on the input shaft with the press and remove the 5th speed gear.

<<F>>4TH SPEED GEAR SLEEVE REMOVAL



1. Using special tool Bearing remover (MD998801), support the 3rd speed gear, and then set them on the press.
2. Push down on the input shaft with the press and remove the 4th speed gear sleeve.

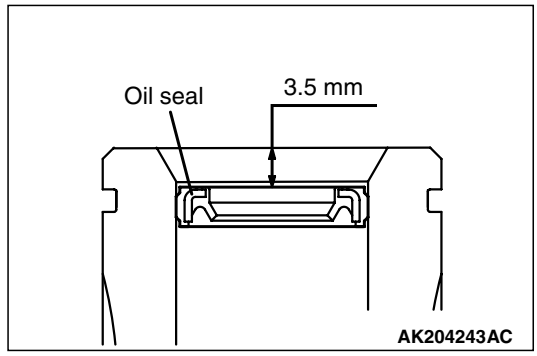
<<G>> BALL BEARING REMOVAL



1. Using special tool Bearing remover (MD998801), support the ball bearing, and then set them on the press.
2. Push down on the input shaft with the press and remove the ball bearing.

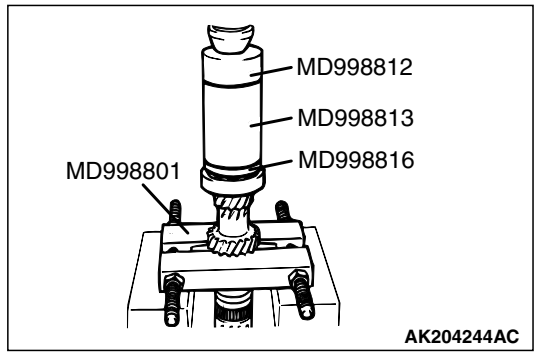
REASSEMBLY SERVICE POINTS

>>A<< OIL SEAL INSTALLATION



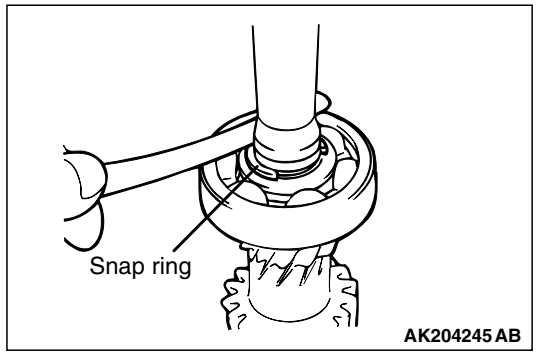
Install the oil seal into the end of the input shaft as shown.

>>B<< BALL BEARING INSTALLATION



1. Using special tool Bearing remover (MD998801), support the 2nd speed gear portion of the input shaft, and then set them on the press.
2. Using special tools, press install the ball bearing with the press.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998816)

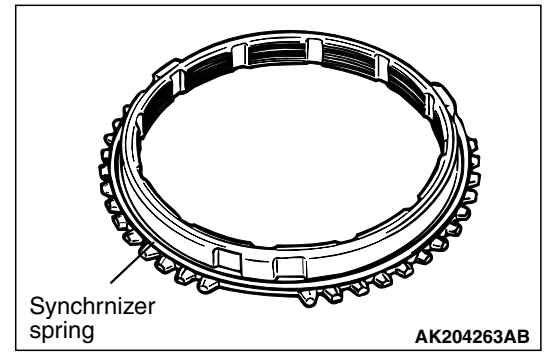
>>C<< SNAP RING INSTALLATION



1. Install the thickest snap ring that can be fitted in the snap ring groove of input shaft.
2. Make sure that the front bearing end play meets the standard value.

Standard value: 0 – 0.12 mm

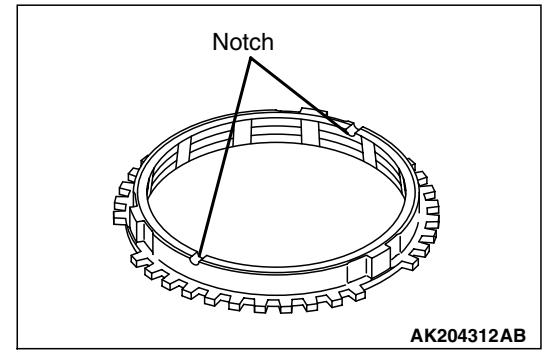
>>D<< SYNCHRONIZER SPRING INSTALLATION



Install the synchronizer spring onto the synchronizer ring as shown.

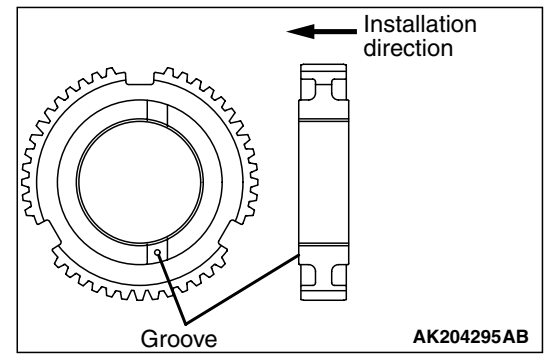
>>E<< SYNCHRONIZER RING INSTALLATION

⚠ CAUTION
There are 3rd speed and 4th speed synchronizer rings, if the wrong one is installed it will effect the shift feeling.

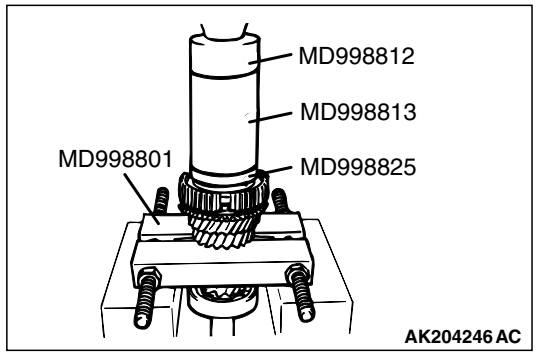


1. Ascertain whether or not there are identification notches on the synchronizer ring.
   Two notches: 3rd speed synchronizer ring
   No notches: 4th speed synchronizer ring
2. Install the synchronizer ring so that it completely fits over the machined cone of the gear.

>>F<< 3RD-4TH SPEED SYNCHRONIZER HUB INSTALLATION

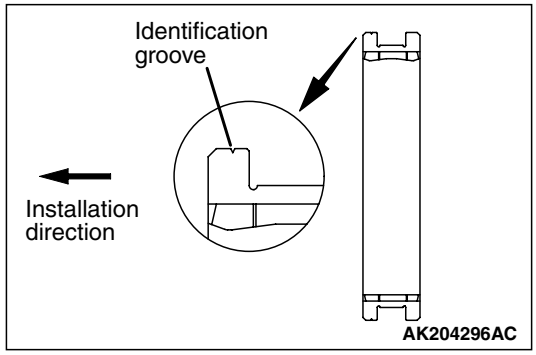


1. Using special tool Bearing remover (MD998801), support the 2nd speed gear portion of the input shaft, and then set them on the press.
2. Make sure that the synchronizer ring has been perfectly matched to the 3rd speed gear cone.
3. Check the installation direction of the 3rd-4th speed synchronizer hub, and put it on the input shaft.

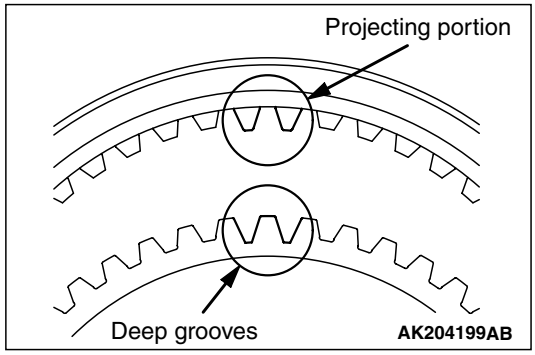


4. Using special tools, press install the 3rd-4th speed synchronizer hub with the press.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998825)
5. Make sure that the synchronizer ring can rotate freely.

>>G<< SYNCHRONIZER SLEEVE INSTALLATION

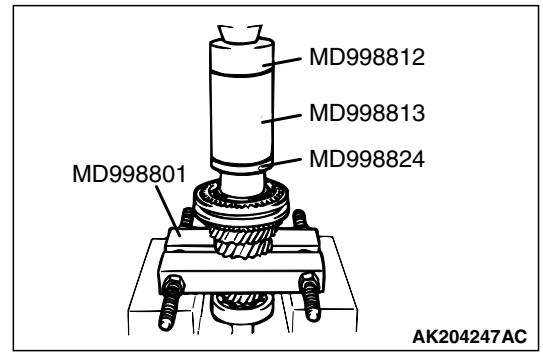


1. Check the installation direction of the synchronizer sleeve, and install it onto the 3rd-4th speed synchronizer hub.



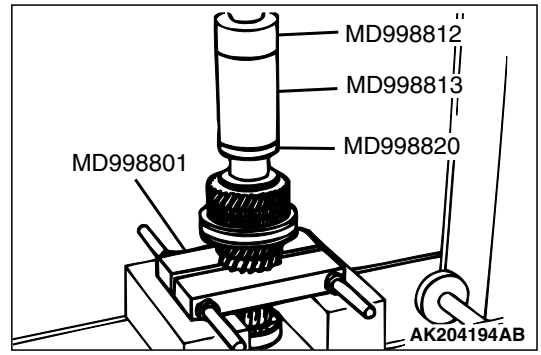
2. Install the synchronizer sleeve so that the areas with teeth that have raised tips (three areas total) are aligned with the areas on the synchronizer hub that have deep grooves between the teeth (three areas total).

>>H<< 4TH SPEED GEAR SLEEVE INSTALLATION



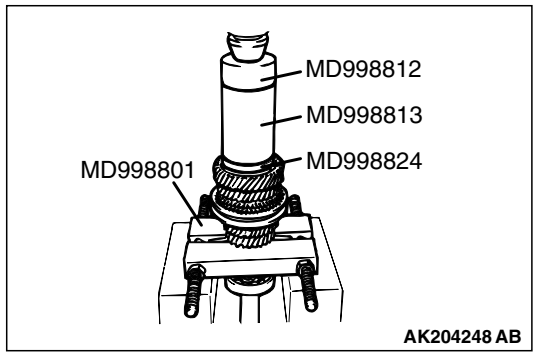
1. Using special tool Bearing remover (MD998801), support the 2nd speed gear portion of the input shaft, and then set them on the press.
2. Using special tools, install the 4th speed gear sleeve with the press.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998824)

>>I<< 5TH SPEED GEAR SLEEVE INSTALLATION



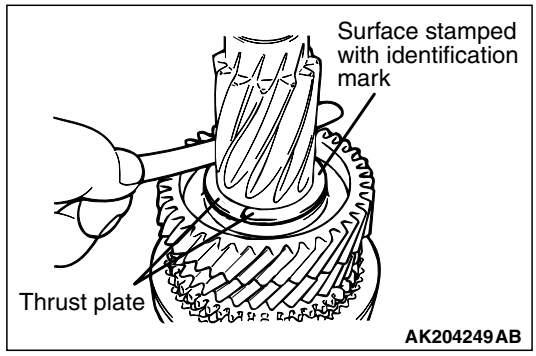
1. Using special tool Bearing remover (MD998801), support the 2nd speed gear portion of the input shaft, and then set them on the press.
2. Using special tools, install the 5th speed gear sleeve onto the input shaft with the press.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998820)

>>J<< 5TH SPEED GEAR INSTALLATION



1. Using special tool Bearing remover (MD998801), support the 2nd speed gear portion of the input shaft, and then set them on the press.
2. Using special tools, install the 5th speed gear onto the input shaft with the press.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998824)

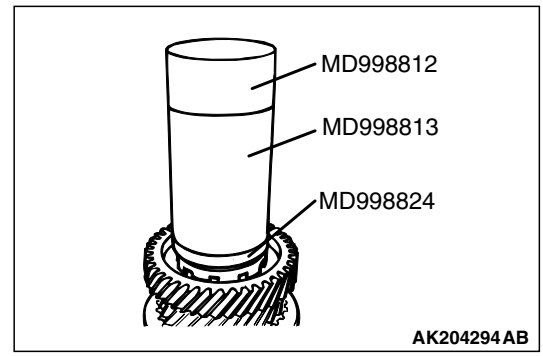
>>K<< THRUST PLATE INSTALLATION



1. Install the thickest thrust plates that can be fitted in the groove of the input shaft. Install the thrust plate so the surface stamped with the identification mark is facing up.
2. Make sure that the 5th speed gear end play meets the standard value.

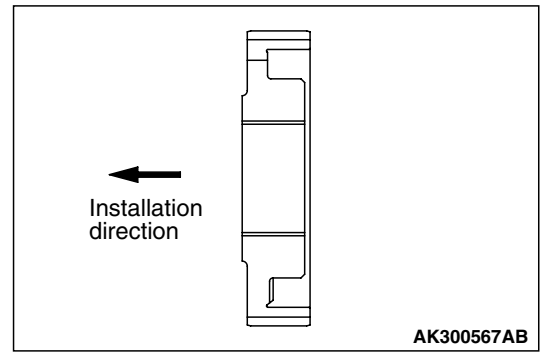
   Standard value: 0 – 0.09 mm

>>L<< THRUST PLATE STOPPER INSTALLATION

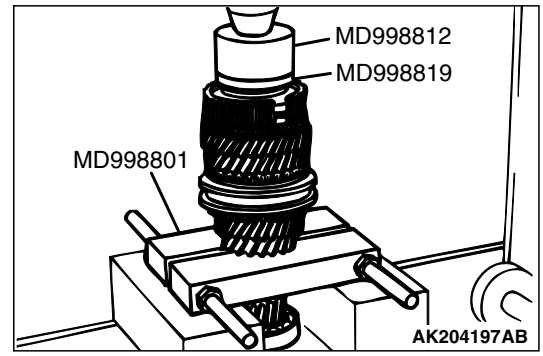


Install the thrust plate stopper by pressing special tools, by hand. Make sure that it is not tilted.
- Installer cap (MD998812)
- Installer-100 (MD998813)
- Installer adapter (MD998824)

>>M<< 5TH SPEED-REVERSE SYNCHRONIZER HUB INSTALLATION



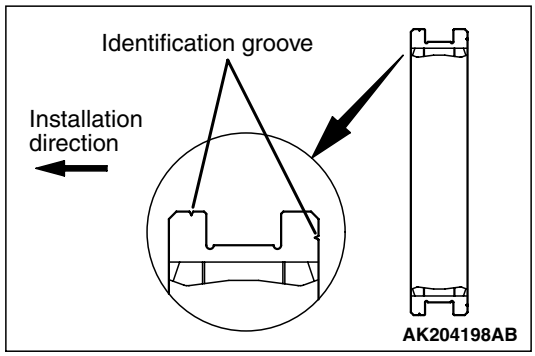
1. Check that the 5th speed- reverse synchronizer hub is in the correct installation direction, and put it on the input shaft.



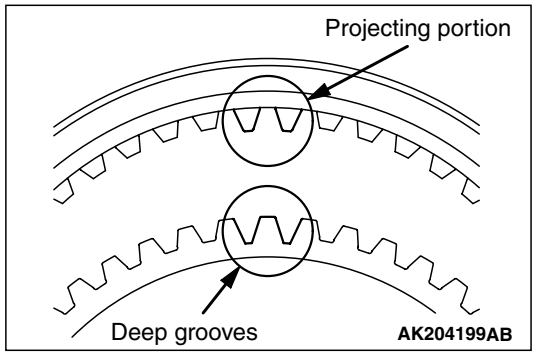
2. Using special tool Bearing remover (MD998801), support the input shaft gear, and then set them on the press.
3. Using special tools, install the 5th speed-reverse synchronizer hub with the press.
   - Installer cap (MD998812)
   - Installer adapter (MD998819)

4. Make sure that the synchronizer ring on the 5th speed gear side can rotate freely.

>>N<< SYNCHRONIZER SLEEVE INSTALLATION

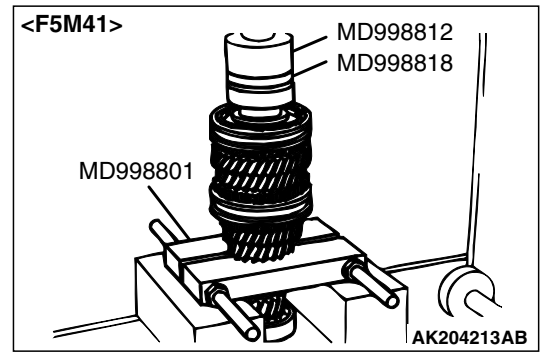


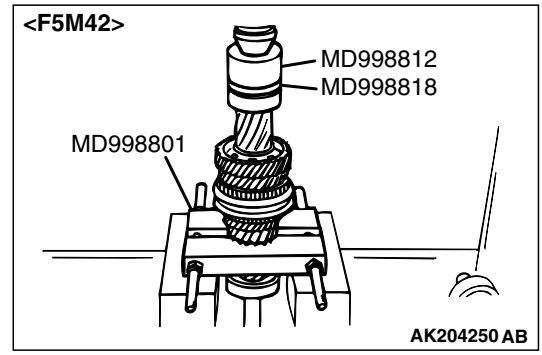
1. Install the synchronizer sleeve so that the identification grooves are oriented in the direction shown.



2. When the synchronizer sleeve is installed, check that the deep groove portion of the synchronizer hub is aligned with the projecting portion of the sleeve.

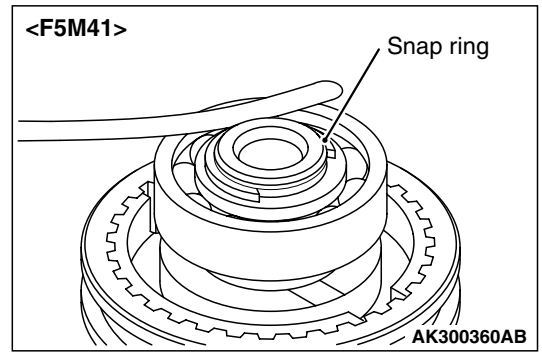
>>O<< BALL BEARING INSTALLATION

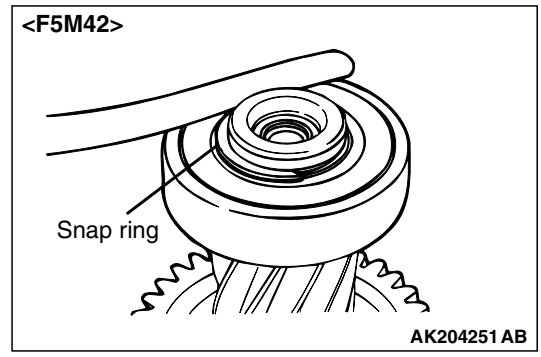




1. Using special tool Bearing remover (MD998801), support the 2nd speed gear portion of the input shaft, and then set them on the press.
2. Using special tools, install the ball bearing onto the input shaft with the press.
   - Installer cap (MD998812)
   - Installer adapter (MD998818)

>>P<< SNAP RING INSTALLATION





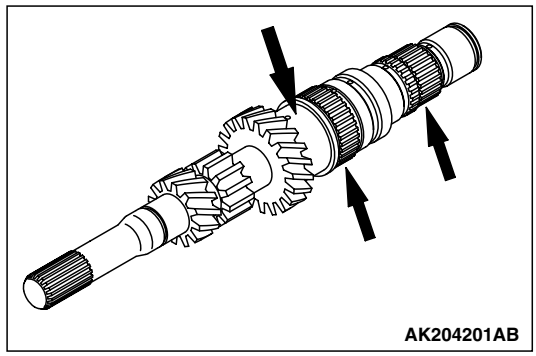
1. Install the thickest snap ring that can be fitted in the groove of the input shaft.
2. Make sure that the rear bearing end play meets the standard value.

Standard value:
0 – 0.09 mm <F5M41>
0 – 0.12 mm <F5M42>

INSPECTION

M1222001700125

INPUT SHAFT

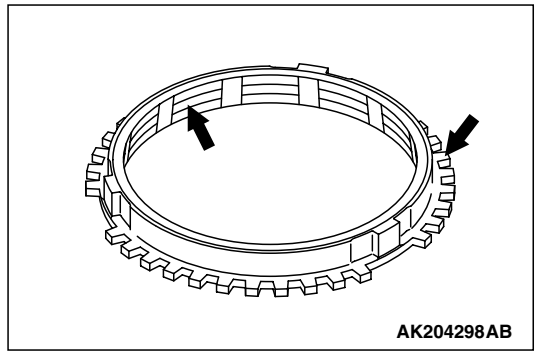


1. Check the outside diameter of the needle bearing mounting portion for damage, abnormal wear and seizure.
2. Check the splines for damage and wear.
3. Check that the helical gear teeth surfaces are not damaged or worn.

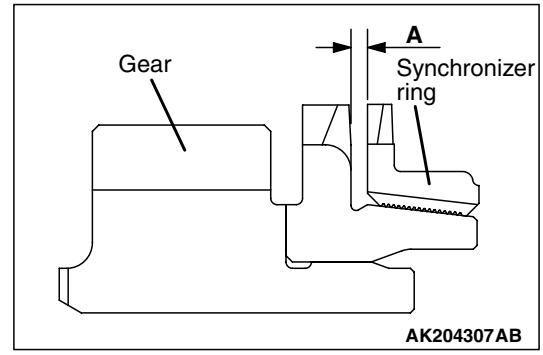
NEEDLE ROLLER BEARING

1. Combine the needle roller bearing with the input shaft or bearing sleeve and gear, and check that it rotates smoothly without noise or play.
2. Check the needle roller bearing cage for deformation.

SYNCHRONIZER RING



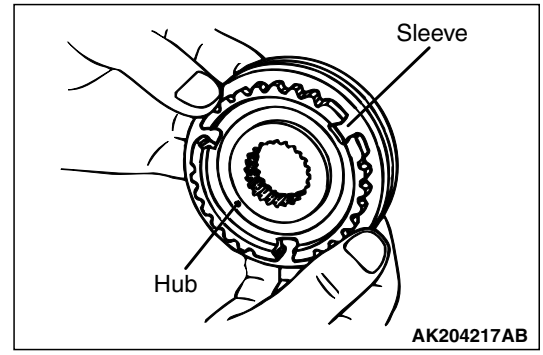
1. Check the clutch gear teeth for damage and broken.
2. Check internal surface for damage, wear and broken threads.



3. Force the synchronizer ring toward the clutch gear and check clearance "A". If "A" is less than the limit, replace the synchronizer ring.

Minimum limit: 0.5 mm

SYNCHRONIZER SLEEVE AND HUB

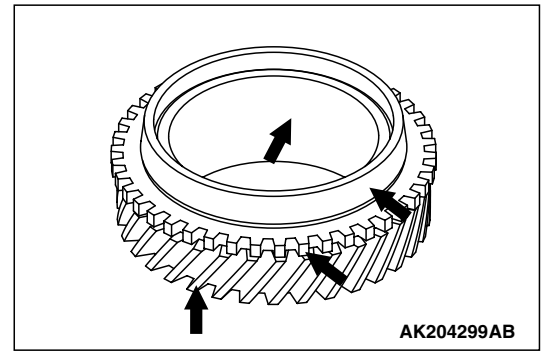


1. Combine the synchronizer sleeve and hub, and check that they slide smoothly.
2. Check that the sleeve is free from damage at its inside splines ends.

SYNCHRONIZER SPRING

Check that the spring is not sagging, deformed or broken.

SPEED GEARS



1. Check that the helical and clutch gear tooth surfaces are not damaged or worn.
2. Check that the synchronizer cone surfaces are not roughened, damaged or worn.

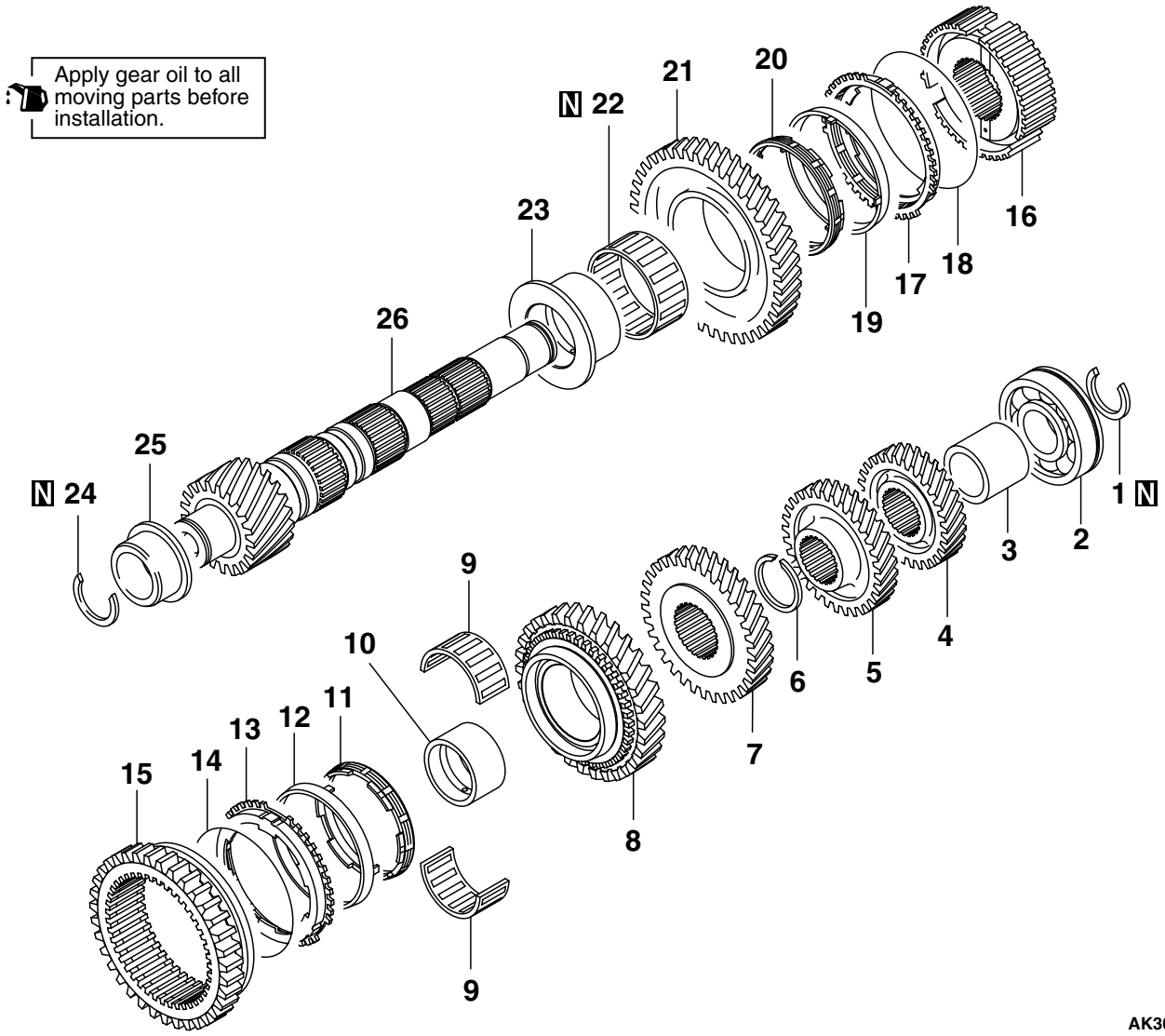
3. Check that the gear inside diameter and front and rear surfaces are not damaged and worn.

OUTPUT SHAFT

DISASSEMBLY AND REASSEMBLY

M1222002200134

<F5M41>



AK300292AB

Disassembly steps

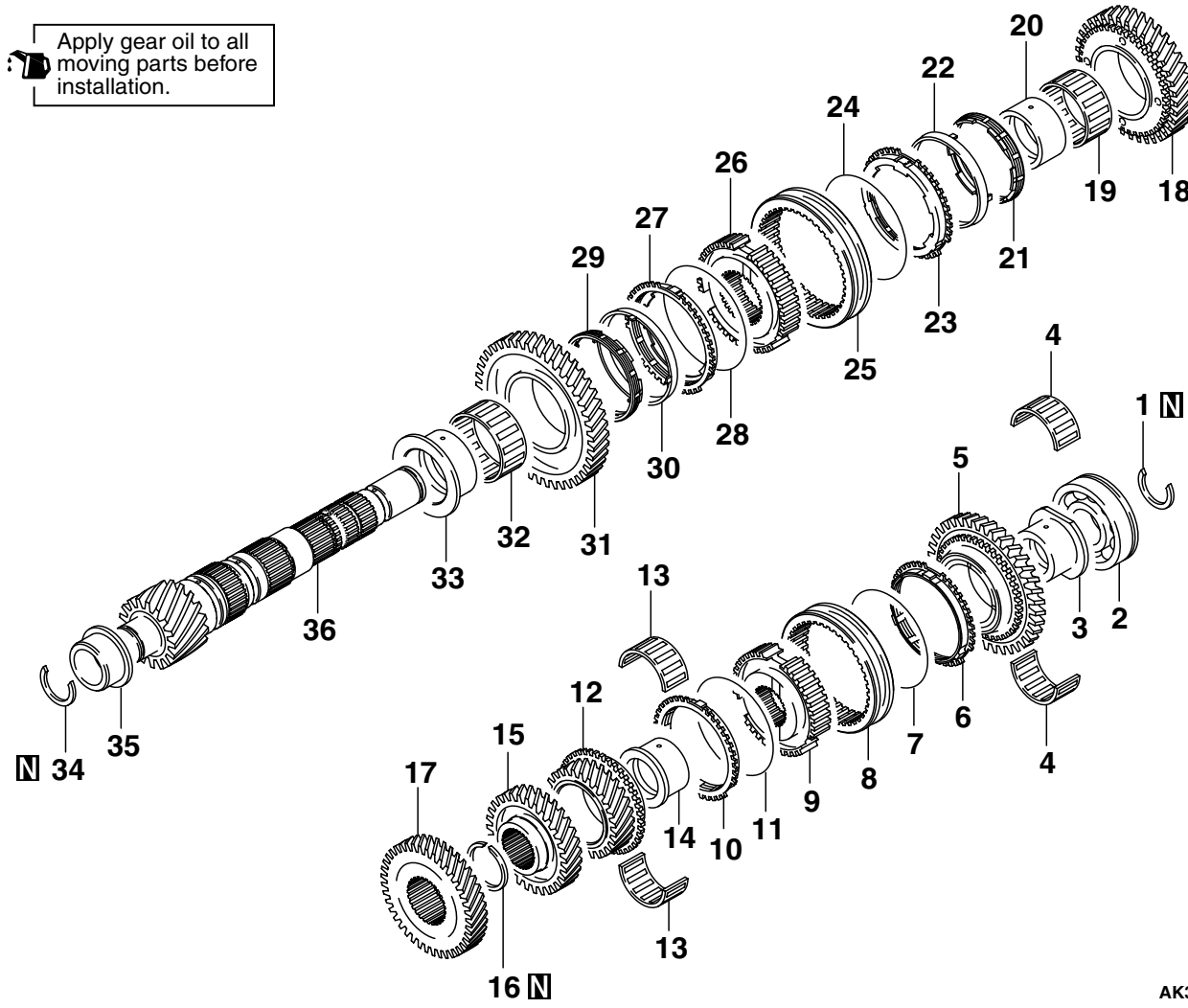
	>>Q<<	1.	Snap ring
<<A>>	>>P<<	2.	Ball bearing
		3.	Collar
		4.	5th speed gear
	>>J<<	5.	4th speed gear
	>>I<<	6.	Snap ring
<<D>>	>>H<<	7.	3rd speed gear
		8.	2nd speed gear
		9.	Needle roller bearing
<<E>>	>>G<<	10.	2nd speed gear sleeve
		11.	Inner synchronizer ring
		12.	Synchronizer cone

Disassembly steps (Continued)

		13.	Outer synchronizer ring
	>>D<<	14.	Synchronizer spring
	>>F<<	15.	Synchronizer sleeve
	>>E<<	16.	1st-2nd speed synchronizer hub
		17.	Outer synchronizer ring
	>>D<<	18.	Synchronizer spring
		19.	Synchronizer cone
		20.	Inner synchronizer ring
		21.	1st speed gear
		22.	Needle roller bearing
<<F>>	>>C<<	23.	1st speed gear sleeve
	>>B<<	24.	Snap ring

Disassembly steps (Continued) **<F5M42>**

<<G>> >>A<< 25. Roller bearing inner race
26. Output shaft



AK300024AB

Disassembly steps

>>Q<< 1. Snap ring
<<A>> >>P<< 2. Ball bearing
<<B>> >>O<< 3. Reverse gear sleeve
4. Needle roller bearing
5. Reverse gear
>>M<< 6. Synchronizer ring
>>L<< 7. Synchronizer spring
>>F<< 8. Synchronizer sleeve
<<C>> >>N<< 9. 5th speed-reverse synchronizer hub
>>M<< 10. Synchronizer ring
>>L<< 11. Synchronizer spring
12. 5th speed gear
13. Needle roller bearing
>>K<< 14. 5th speed gear sleeve
>>J<< 15. 4th speed gear
>>I<< 16. Snap ring
<<D>> >>H<< 17. 3rd speed gear

Disassembly steps (Continued)

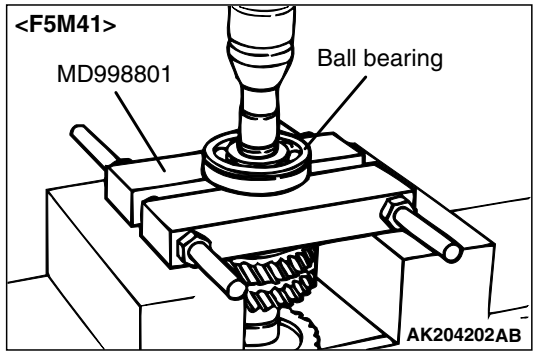
18. 2nd speed gear
19. Needle roller bearing
<<E>> >>G<< 20. 2nd speed gear sleeve
21. Inner synchronizer ring
22. Synchronizer cone
23. Outer synchronizer ring
>>D<< 24. Synchronizer spring
>>F<< 25. Synchronizer sleeve
>>E<< 26. 1st-2nd speed synchronizer hub
27. Outer synchronizer ring
>>D<< 28. Synchronizer spring
29. Inner synchronizer ring
30. Synchronizer cone
31. 1st speed gear
32. Needle roller bearing
<<F>> >>C<< 33. 1st speed gear sleeve
>>B<< 34. Snap ring

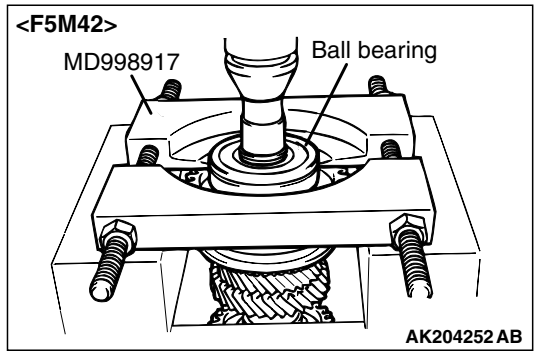
Disassembly steps (Continued)

<<G>> >>A<< 35. Roller bearing inner race
36. Output shaft

DISASSEMBLY SERVICE POINTS

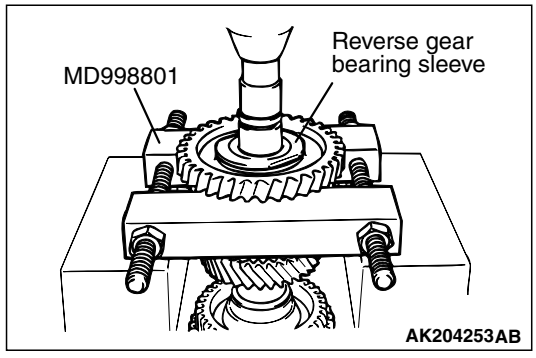
<<A>> BALL BEARING REMOVAL





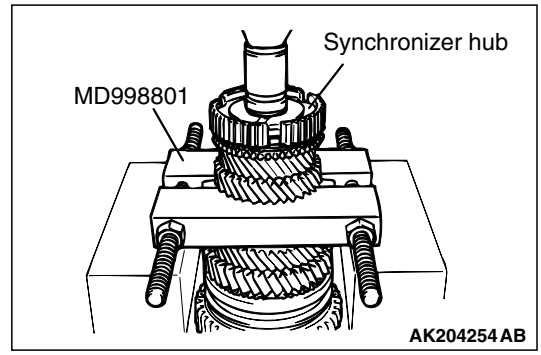
1. Using special tools, support the ball bearing, and then set them on the press.
   - Bearing remover (MD998801) <F5M41>
   - Bearing remover (MD998917) <F5M42>
2. Push down on the output shaft with the press, and remove the ball bearing.

<<B>> REVERSE GEAR SLEEVE REMOVAL



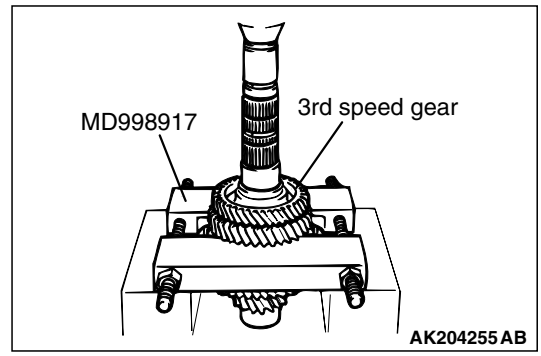
1. Using special tool Bearing remover (MD998801), support the reverse gear, and then set them on the press.
2. Push down on the output shaft with the press and remove the reverse gear bearing sleeve.

<<C>> 5TH SPEED-REVERSE SYNCHRONIZER HUB REMOVAL



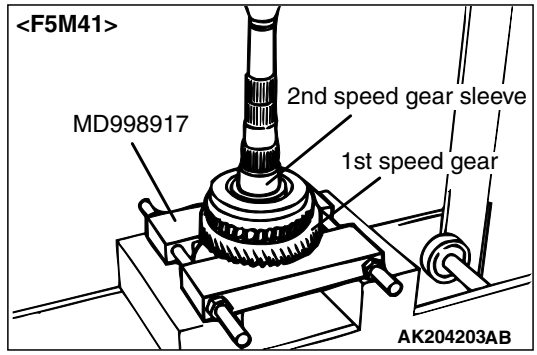
1. Using special tool Bearing remover (MD998801), support the 4th speed gear, and then set them on the press.
2. Push down on the output shaft with the press and remove the 5th speed-reverse synchronizer hub.

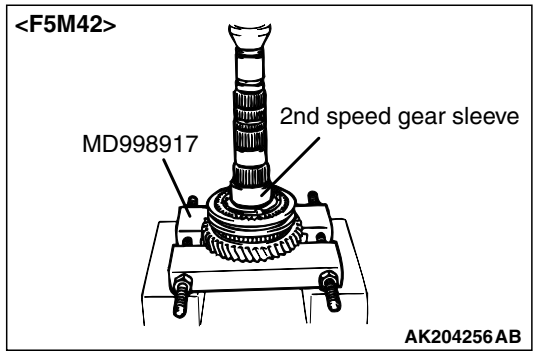
<<D>> 3RD SPEED GEAR REMOVAL



1. Using special tool Bearing remover (MD998917), support the 2nd speed gear, and then set them on the press.
2. Push down on the output shaft with the press and remove the 3rd speed gear.

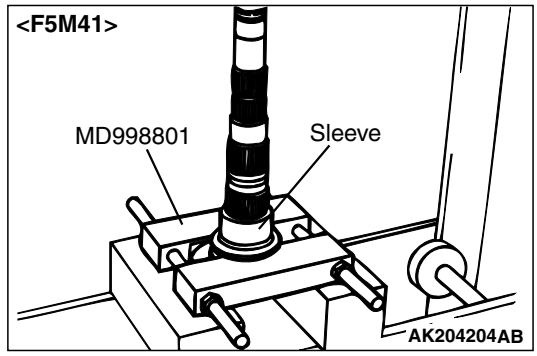
<<E>> 2ND SPEED GEAR SLEEVE REMOVAL

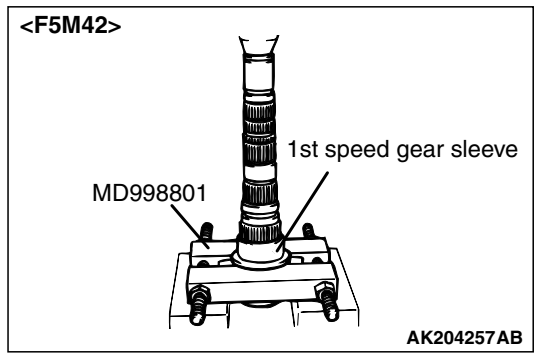




1. Using special tool Bearing remover (MD998917), support the 1st speed gear, and then set them on the press.
2. Push down on the output shaft with the press and remove the 2nd speed gear sleeve.

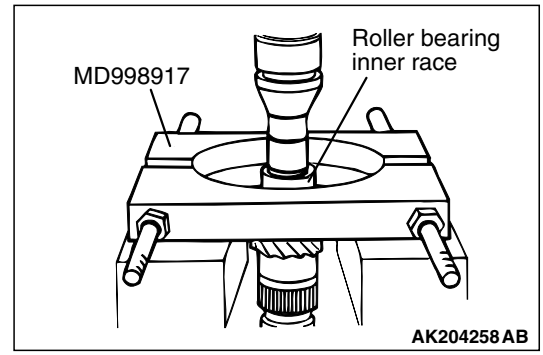
<<F>> 1ST SPEED GEAR SLEEVE REMOVAL





1. Using special tool Bearing remover (MD998801), support the 1st speed gear sleeve, and then set them on the press.
2. Push down on the output shaft with the press and remove the 1st speed gear sleeve.

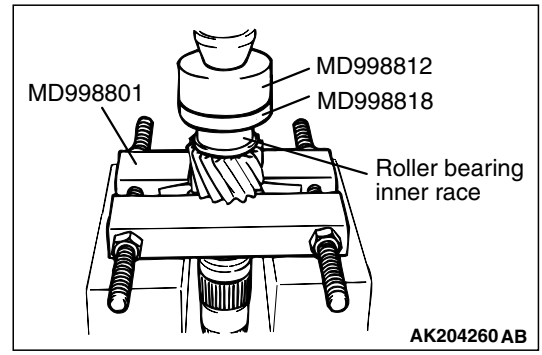
<<G>> ROLLER BEARING INNER RACE REMOVAL



1. Using special tool Bearing remover (MD998917), support the roller bearing inner race, and then set them on the press.
2. Push down on the output shaft with the press and remove the roller bearing inner race.

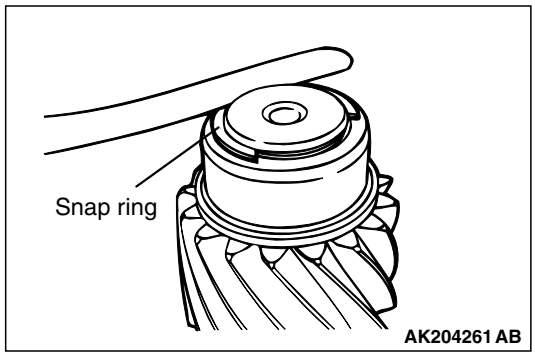
REASSEMBLY SERVICE POINTS

>>A<< ROLLER BEARING INNER RACE INSTALLATION



1. Using special tool Bearing remover (MD998801), support the output shaft gear, and then set them on the press.
2. Using special tools, install the roller bearing inner race with the press.
   - Installer cap (MD998812)
   - Installer adapter (MD998818)

>>B<< SNAP RING INSTALLATION

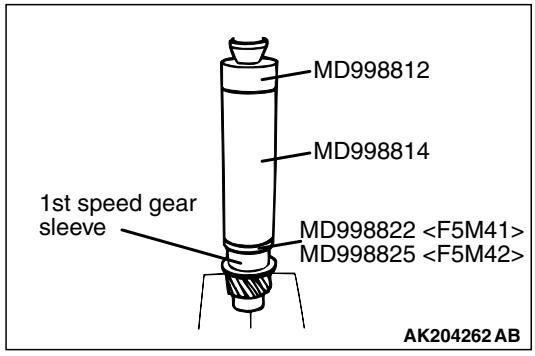


1. Install the thickest snap ring that can be fitted in the groove of output shaft.
2. Make sure that the front bearing end play meets the standard value.

   Standard value: 0 – 0.12 mm

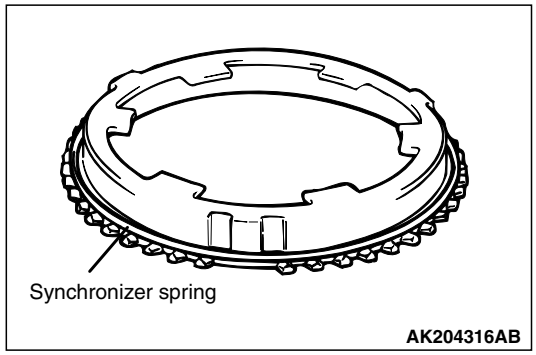
>>C<<1ST SPEED GEAR SLEEVE INSTALLATION

1. Set the output shaft on the press support stand.



2. Using special tools, install the 1st speed gear sleeve with the press.
   - Installer cap (MD998812)
   - Installer-200 (MD998814)
   - Installer adapter (MD998822) <F5M41>
   - Installer adapter (MD998825) <F5M42>

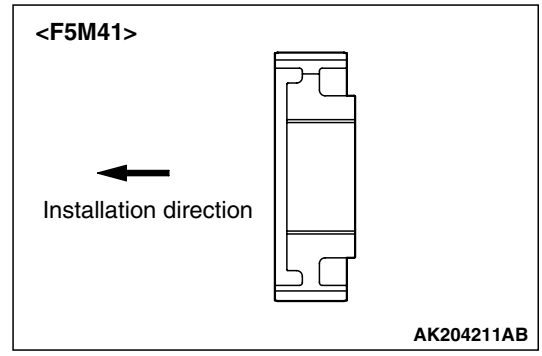
>>D<< SYNCHRONIZER SPRING INSTALLATION

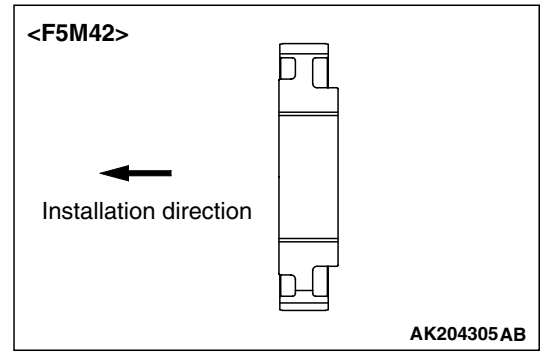


Install the synchronizer spring onto the outer synchronizer ring as shown.

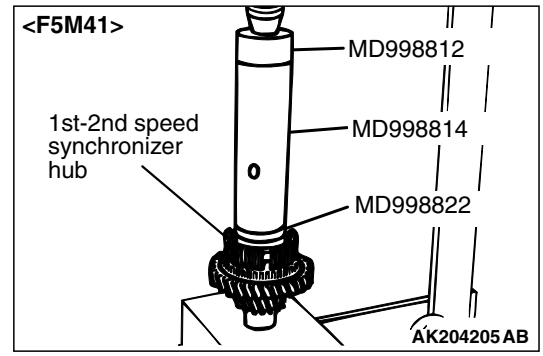
>>E<< 1ST-2ND SPEED SYNCHRONIZER HUB INSTALLATION

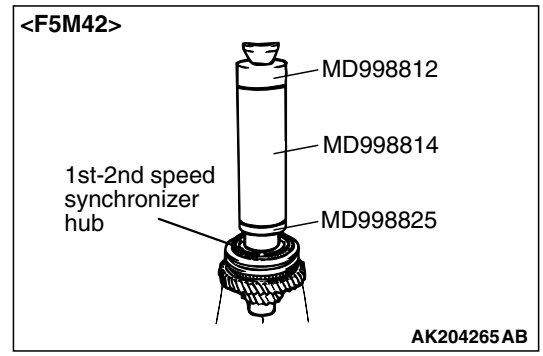
1. Set the output shaft on the press support stand.





2. Check that the 1st-2nd speed synchronizer hub is in the correct installation direction, and put it on the output shaft.



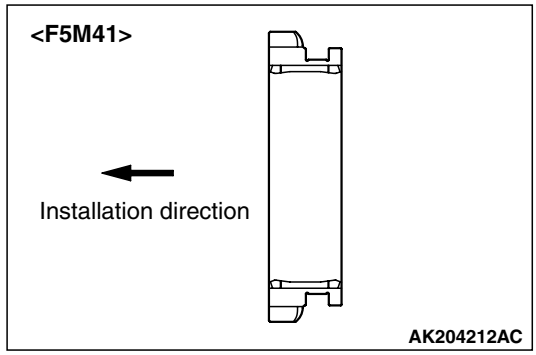


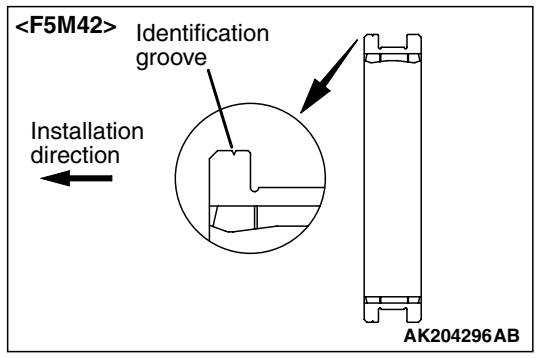
3. Using special tools, install the 1st-2nd speed synchronizer hub with the press.

- Installer cap (MD998812)
- Installer-200 (MD998814)
- Installer adapter (MD998822) <F5M41>
- Installer adapter (MD998825) <F5M42>

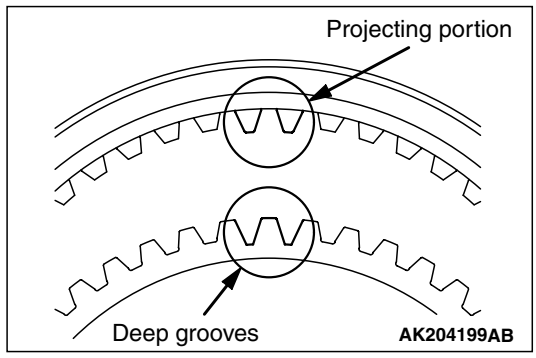
4. Make sure that the outer synchronizer ring on the 1st speed gear side can rotate freely.

>>F<< SYNCHRONIZER SLEEVE INSTALLATION





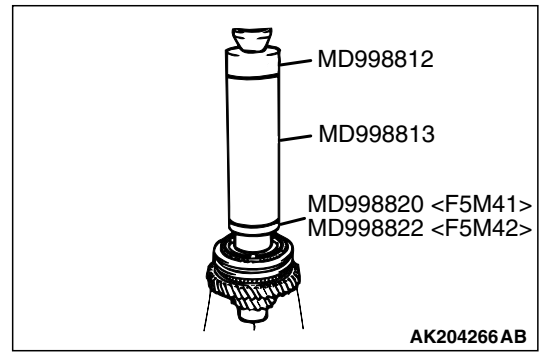
1. Check that the synchronizer sleeve is in the correct direction for installation, and install it on the 1st-2nd speed synchronizer hub.



2. Install the synchronizer sleeve so that the areas with teeth that have raised tips (three areas total) are aligned with the areas on the synchronizer hub that have deep grooves between the teeth (three areas total).

>>G<< 2ND SPEED GEAR SLEEVE INSTALLATION

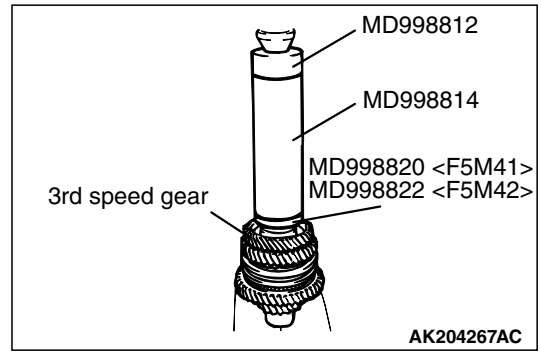
1. Set the output shaft on the press support stand.



2. Using special tools, install the 2nd speed sleeve onto the output shaft with the press.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998820) <F5M41>
   - Installer adapter (MD998822) <F5M42>

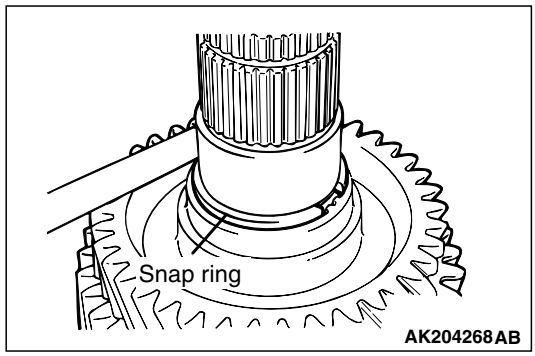
>>H<< 3RD SPEED GEAR INSTALLATION

1. Check that the 2nd speed gear and the outer synchronizer ring have been properly installed. Also, make sure the claws on the synchronizer cone (four places) are correctly fitted into the holes in the 2nd speed gear (four places).



2. Using special tools, install the 3rd speed gear onto the output shaft with the press.
   - Installer cap (MD998812)
   - Installer-200 (MD998814)
   - Installer adapter (MD998820) <F5M41>
   - Installer adapter (MD998822) <F5M42>
3. Make sure that the 2nd speed gear and the outer synchronizer ring can rotate freely.

>>I<< SNAP RING INSTALLATION

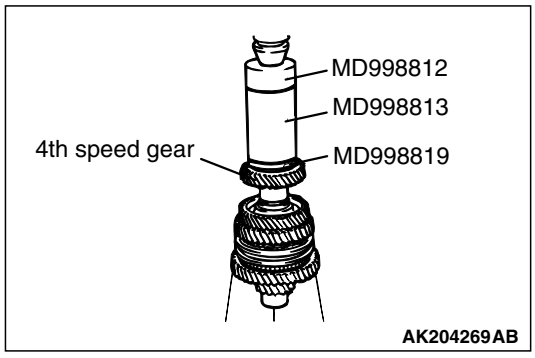


1. Install the thickest snap ring that can be fitted in the groove of output shaft.
2. Make sure that the 3rd speed gear end play meets the standard value.

Standard value: 0 – 0.09 mm

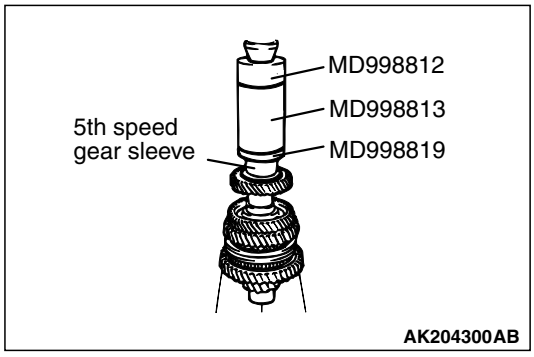
>>J<< 4TH SPEED GEAR INSTALLATION

1. Set the output shaft on the press support stand.



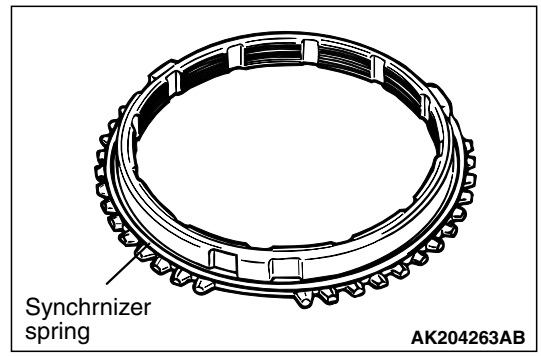
2. Using special tools, install the 4th speed gear onto the output shaft with the press.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998819)

>>K<< 5TH SPEED GEAR SLEEVE INSTALLATION



Using special tools, install the 5th speed gear sleeve onto the output shaft with the press.
- Installer cap (MD998812)
- Installer-100 (MD998813)
- Installer adapter (MD998819)

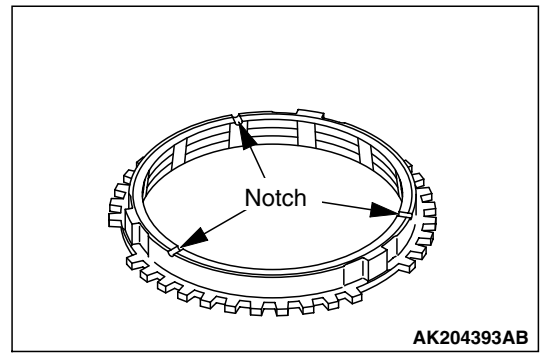
>>L<< SYNCHRONIZER SPRING INSTALLATION



Install the synchronizer spring onto the synchronizer ring as shown.

>>M<< SYNCHRONIZER RING INSTALLATION

⚠ CAUTION
There is a 5th speed synchronizer ring and a reverse synchronizer ring. Be careful not to confuse the two when installing, as a mistake can effect the shift feeling.



1. Check for the presence of identification notches on the synchronizer ring.

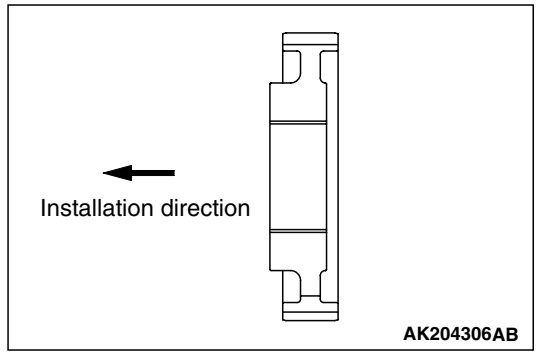
No notches: 5th speed synchronizer ring

Three notches: Reverse synchronizer ring

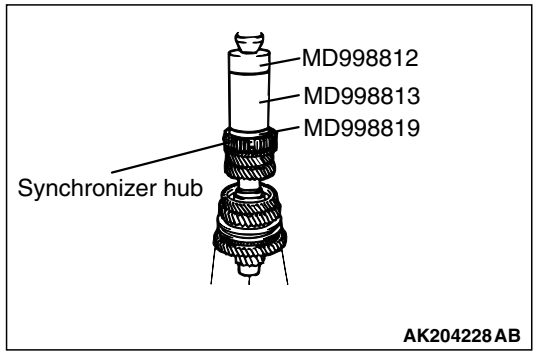
2. Install the synchronizer ring so that it fits completely over the machined cone of the gear.

>>N<< 5TH SPEED-REVERSE SYNCHRONIZER HUB INSTALLATION

1. Set the output shaft on the press support stand.
2. Make sure that the synchronizer ring is fitted correctly on the cone of the 5th speed gear.



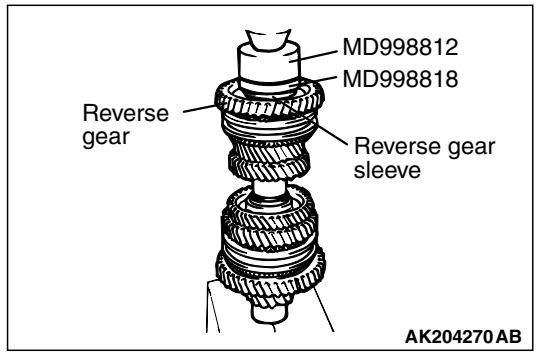
3. Check that the 5th speed-reverse synchronizer hub is oriented correctly for installation, and fit it on the output shaft.



4. Using special tools, press install the 5th speed-reverse synchronizer hub with the press.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998819)
5. Make sure that the synchronizer ring on the 5th speed gear side can rotate freely.

>>O<< REVERSE GEAR SLEEVE INSTALLATION

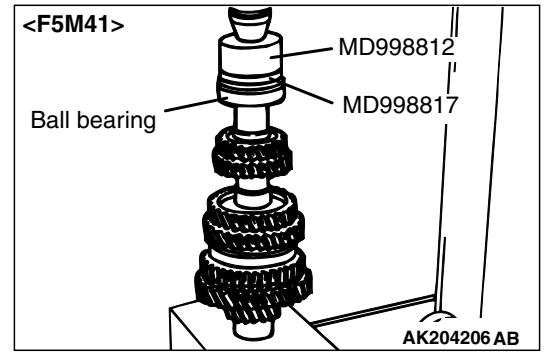
1. Make sure the synchronizer ring, reverse gear and needle roller bearing have been correctly installed.

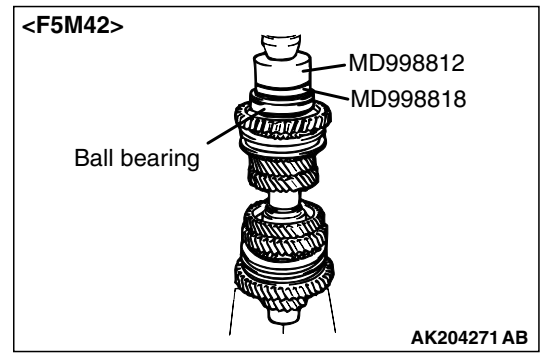


2. Using special tools, press fit the reverse gear sleeve. Make sure that the reverse gear and the synchronizer ring can rotate freely during the pressing process.
   - Installer cap (MD998812)
   - Installer adapter (MD998818)

>>P<< BALL BEARING INSTALLATION

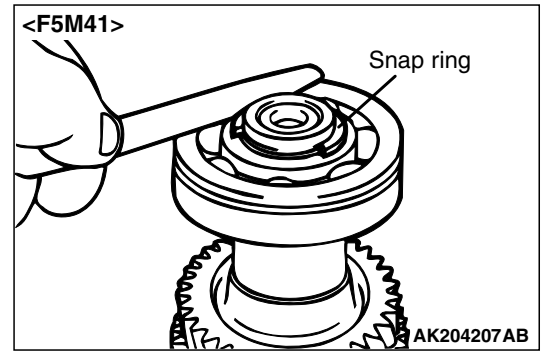
1. Check the installation direction of the ball bearing.

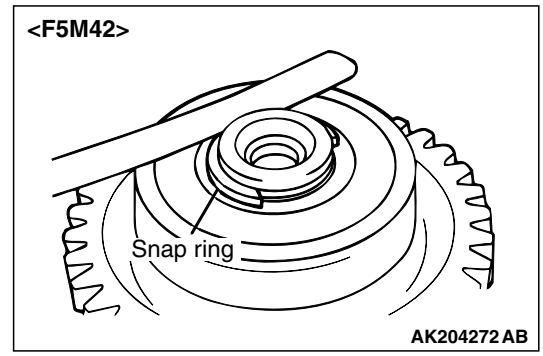




2. Using special tools, install the ball bearing with the press.
   - Installer cap (MD998812)
   - Installer adapter (MD998817) <F5M41>
   - Installer adapter (MD998818) <F5M42>

>>Q<< SNAP RING INSTALLATION





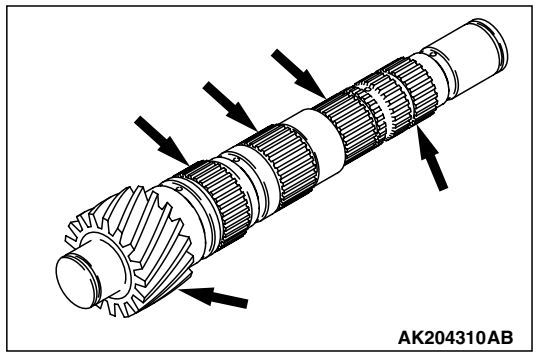
1. Install the thickest snap ring that can be fitted in the groove of output shaft.
2. Make sure that the rear bearing end play meets the standard value.

Standard value: 0 – 0.09 mm

INSPECTION

M1222002300119

OUTPUT SHAFT

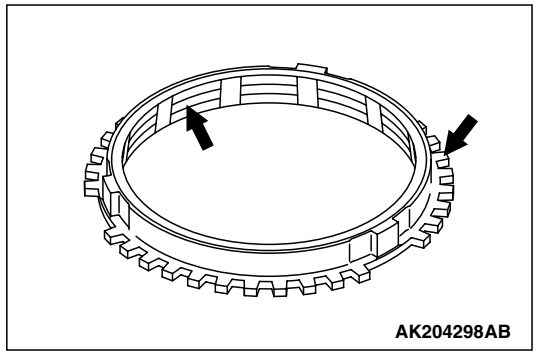

AK204310AB

1. Check the splines for damage and wear.
2. Check that the helical gear teeth surfaces are not damaged or worn.

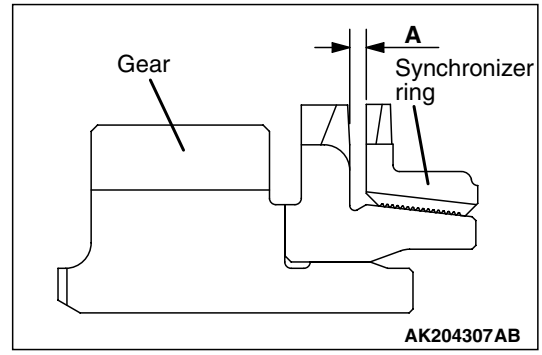
NEEDLE ROLLER BEARING

1. Combine the needle roller bearing with the bearing sleeve and gear, and check that it rotates smoothly without noise or play.
2. Check the needle roller bearing cage for deformation.

SYNCHRONIZER RING


AK204298AB

1. Check if the clutch gear teeth are damaged or broken.
2. Check internal surface for damage, wear and broken threads.



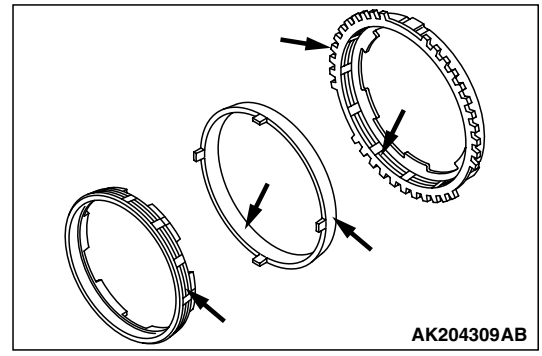
AK204307AB

3. Force the synchronizer ring toward the clutch gear and check clearance "A". If "A" is less than the limit, replace the synchronizer ring.

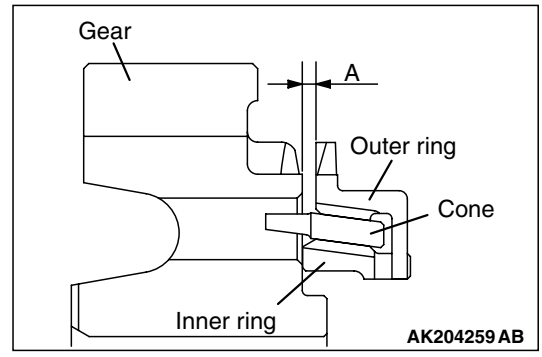
Minimum limit: 0.5 mm

OUTER SYNCHRONIZER RING/INNER SYNCHRONIZER RING/SYNCHRONIZER CONE

⚠ CAUTION
When replacing, replace the outer ring, inner ring and cone as a set.


AK204309AB

1. Check that the clutch gear tooth surfaces and cone surfaces are not damaged or broken.

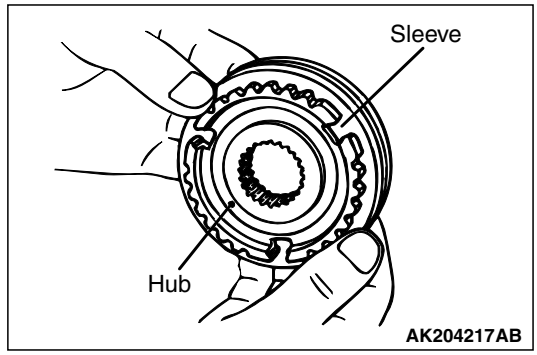


AK204259AB

2. Install the outer ring, inner ring and cone, force them toward the gear, and check clearance "A". If "A" is less than the limit, replace them as a set.

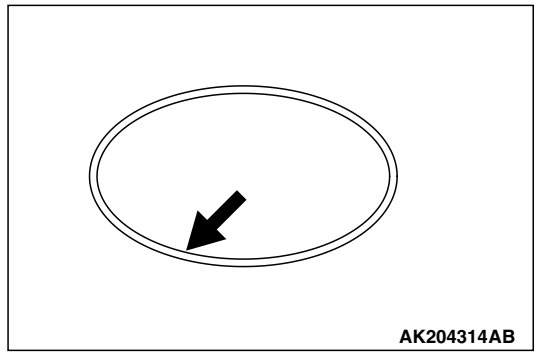
Minimum limit: 0.5 mm

SYNCHRONIZER SLEEVE AND HUB



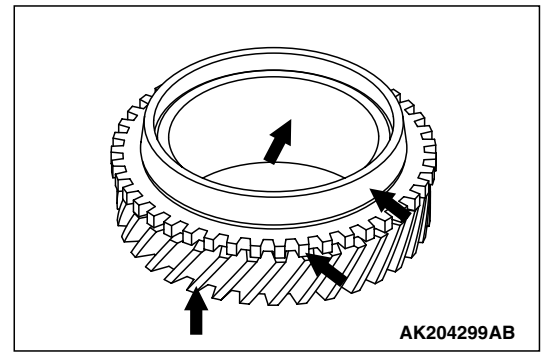
1. Combine the synchronizer sleeve and hub, and check that they slide smoothly.
2. Check that the sleeve is free from damage at its inside splines ends.

SYNCHRONIZER SPRING



Check that the spring is not sagging, deformed or broken.

SPEED GEARS



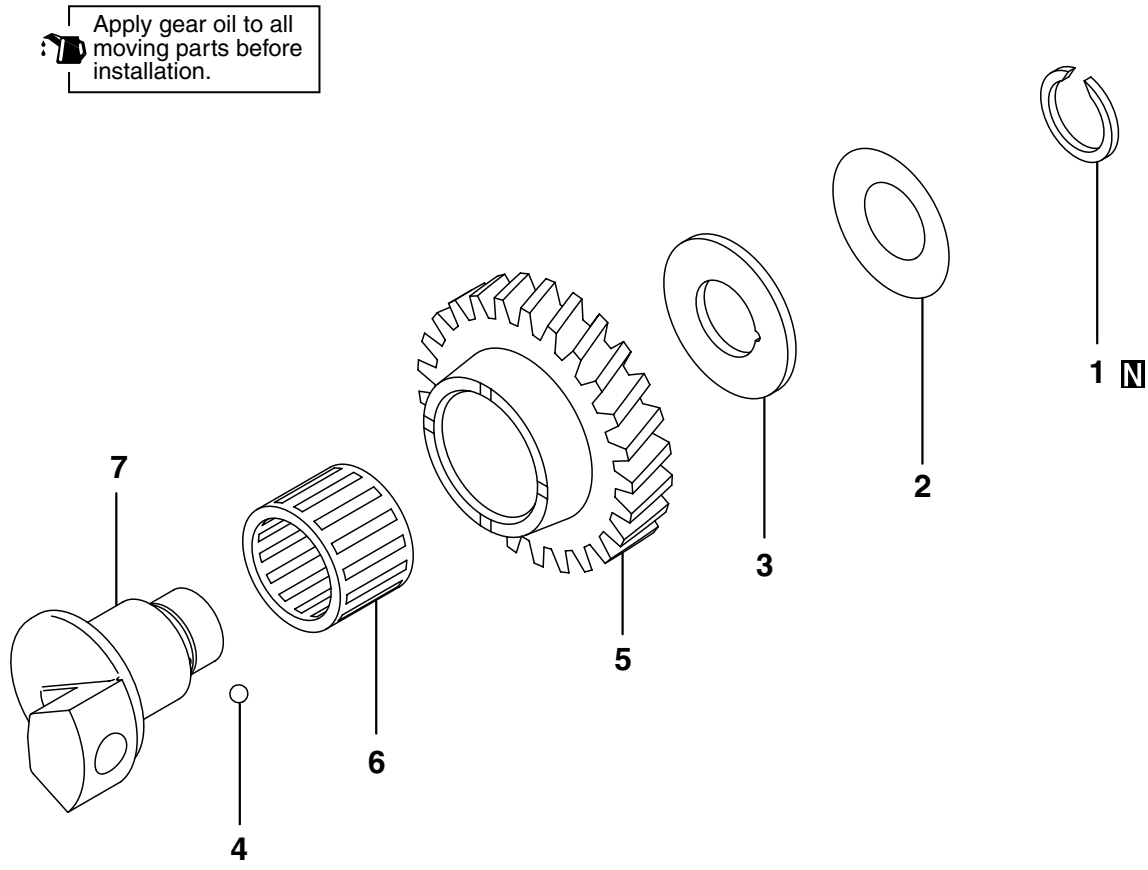
1. Check that the helical and clutch gear tooth surfaces are not damaged or worn.
2. Check that the synchronizer cone surfaces are not roughened, damaged or worn.
3. Check that the gear inside diameter and front and rear surfaces are not damaged and worn.

REVERSE IDLER GEAR

DISASSEMBLY AND REASSEMBLY

M1222012500103

<F5M42>



AK204396AB

Disassembly steps

1. Snap ring
2. Cone spring
3. Thrust washer
4. Steel ball

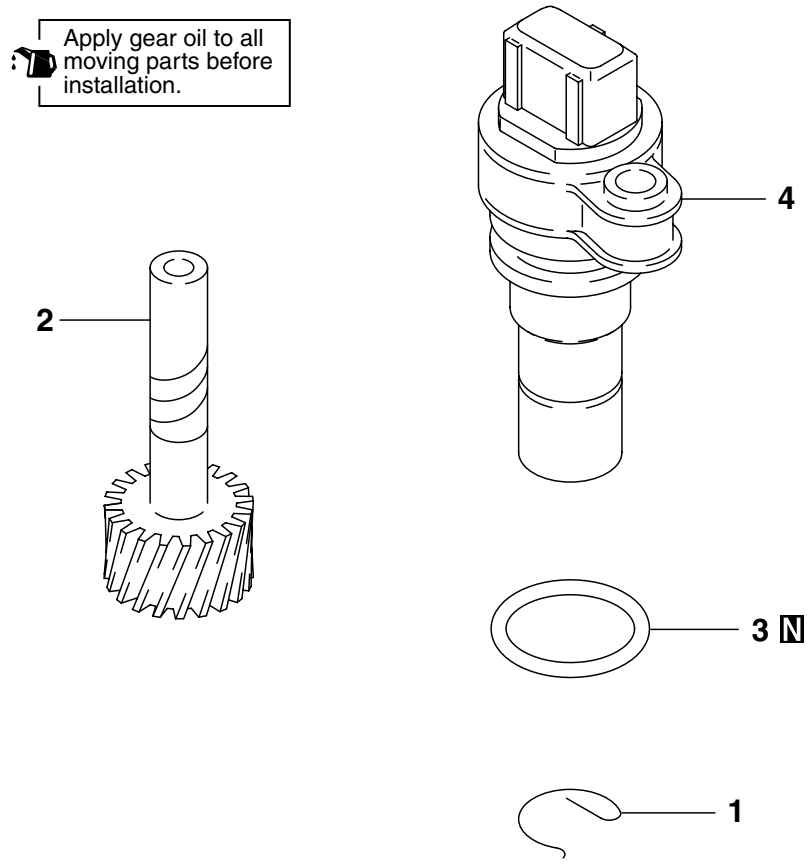
Disassembly steps (Continued)

5. Reverse idler gear
6. Needle roller bearing
7. Reverse idler gear shaft

SPEEDOMETER GEAR

DISASSEMBLY AND REASSEMBLY

M1222003400108



AK204397AB

Disassembly steps

1. E-clip
2. Speedometer driven gear

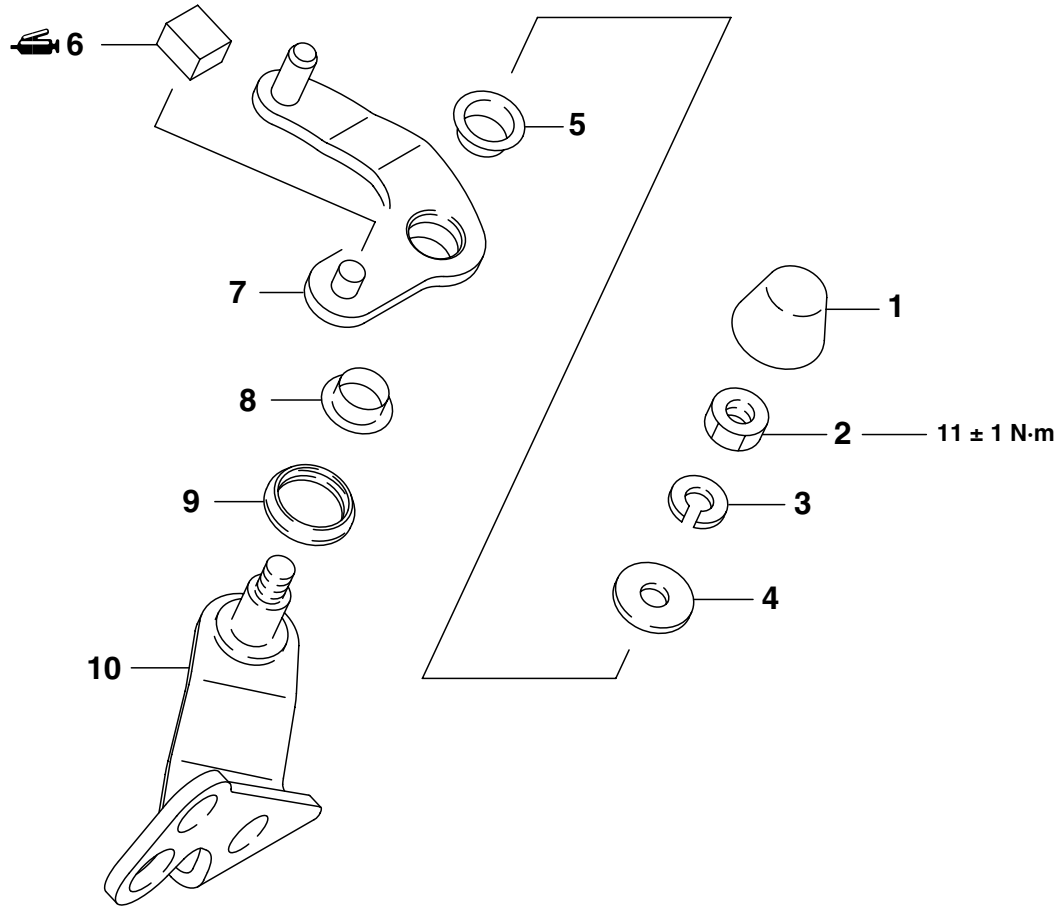
Disassembly steps (Continued)

3. O-ring
4. Sleeve

SELECT LEVER

DISASSEMBLY AND REASSEMBLY

M1222012800096



AK204398AB

Disassembly steps

1. Dust cover
2. Nut
3. Spring washer
4. Washer

>>A<< 5. Select lever bushing

6. Select lever shoe
7. Select lever

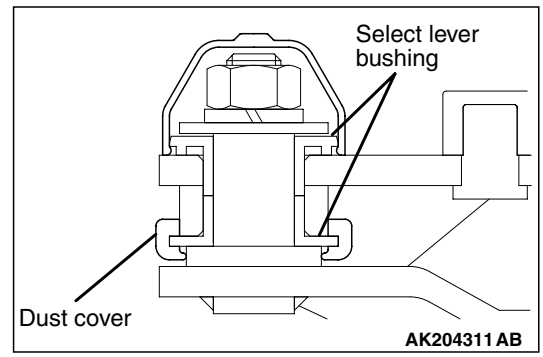
>>A<< 8. Select lever bushing

>>A<< 9. Dust cover

10. Select lever shaft

REASSEMBLY SERVICE POINT

>>A<< DUST COVER AND SELECT LEVER BUSHING INSTALLATION

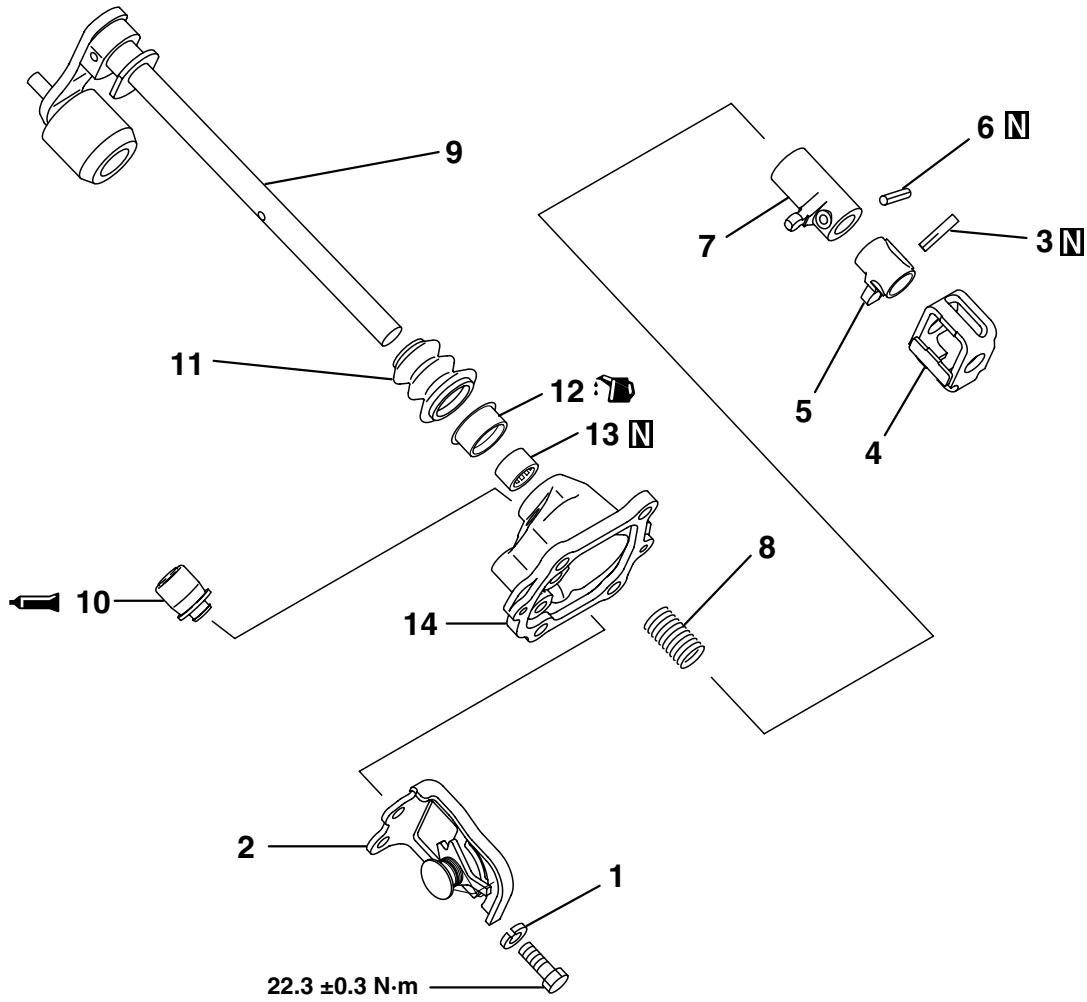


Make sure the dust cover and select lever bushing installation direction is correct, and the distinguished parts are correctly assembled as shown.

CONTROL HOUSING

DISASSEMBLY AND REASSEMBLY

M1222013100131



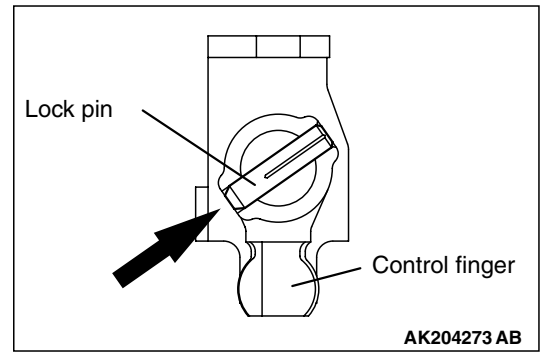
AK301760AB

Disassembly steps

	1.	Spring washer
	2.	Stopper bracket
<<A>> >>E<<	3	Lock pin
	4.	Interlock plate
	5.	Control finger
>>D<<	6.	Spring pin
	7.	Stopper body
	8.	Spring
	9.	Control shaft
>>C<<	10.	Air breather
	11.	Control shaft boot
>>B<<	12.	Oil seal
>>A<<	13.	Needle bearing
	14.	Control housing

DISASSEMBLY SERVICE POINT

<<A>> LOCK PIN REMOVAL

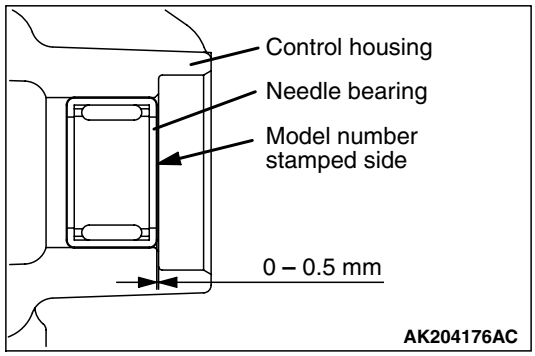


AK204273AB

Drive out the lock pin from the direction shown.

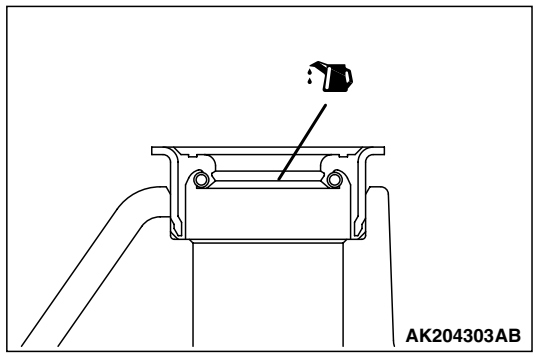
REASSEMBLY SERVICE POINTS

>>A<< NEEDLE BEARING INSTALLATION



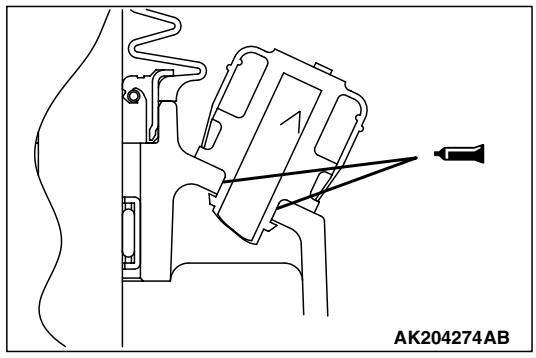
Press fit the needle bearing into the control housing side as shown.
Make sure that the side with the model number stamped on it faces the end of the control housing as shown.

>>B<< OIL SEAL INSTALLATION

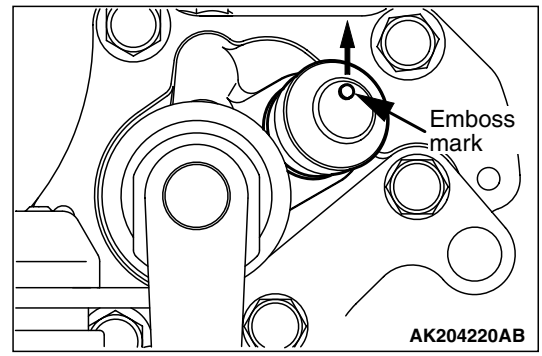


Apply gear oil (Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4) to the oil seal lip area.

>>C<< AIR BREATHER INSTALLATION

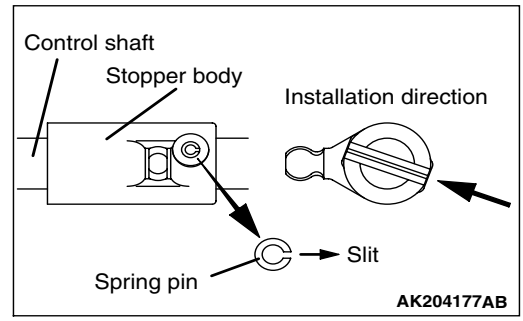


1. Apply sealant (3M SUPER WEATHERSTRIP No. 8001 or equivalent) to the inserting portion of air breather.



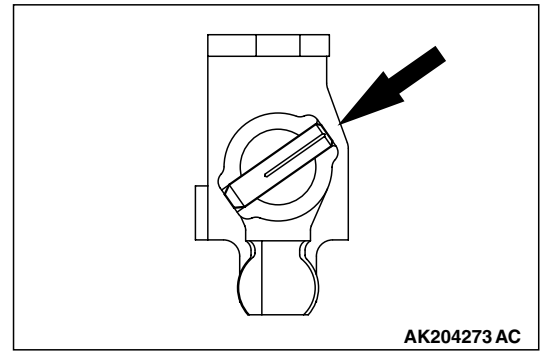
2. Install the air breather so that the embossed mark is in the direction shown in the figure.

>>D<< SPRING PIN INSTALLATION



Drive in the spring pin so that the slit is in the direction shown in the figure.

>>E<<LOCK PIN INSTALLATION

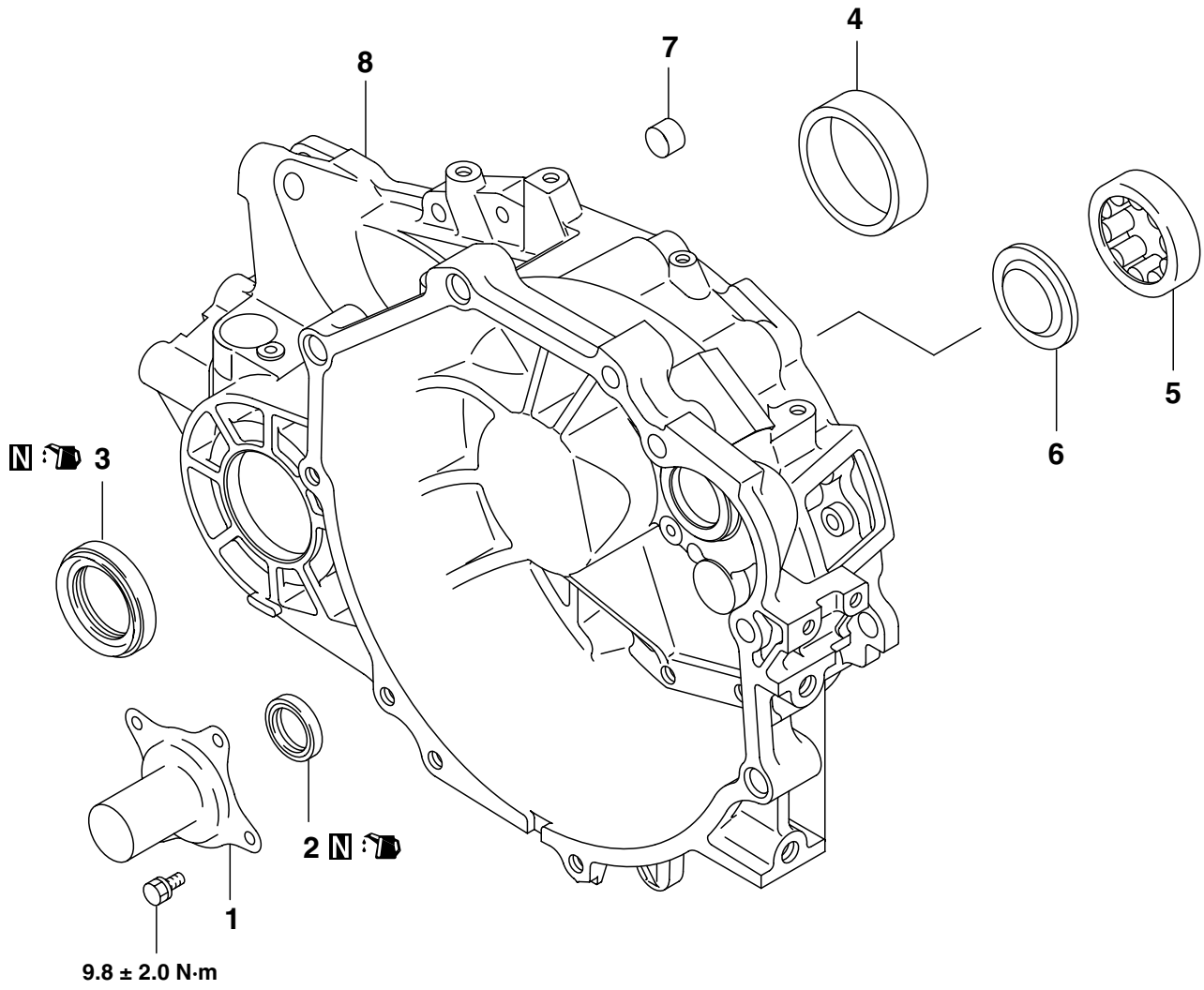


Drive the lock pin in from the direction shown in the figure.

CLUTCH HOUSING

DISASSEMBLY AND REASSEMBLY

M1222003700132

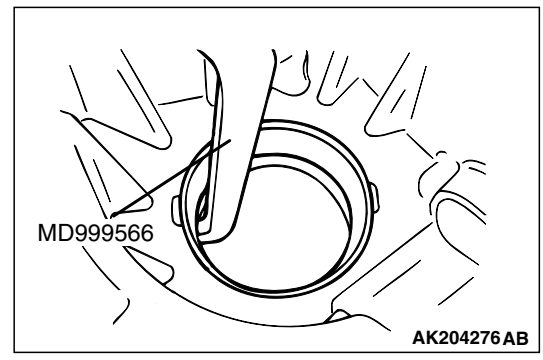


AK300521AB

		Disassembly steps
	1.	Clutch release bearing retainer
>>E<<	2.	Oil seal
>>D<<	3	Oil seal
<<A>> >>C<<	4.	Outer race <F5M42>
<<B>> >>B<<	5.	Outer race
	6.	Oil guide <F5M41>
>>A<<	7.	Bushing
	8.	Clutch housing

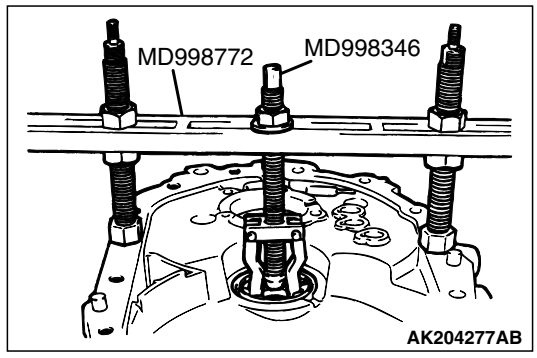
DISASSEMBLY SERVICE POINT

<<A>> OUTER RACE REMOVAL



Using special tool Claw (MD999566), remove the outer race from the clutch housing.

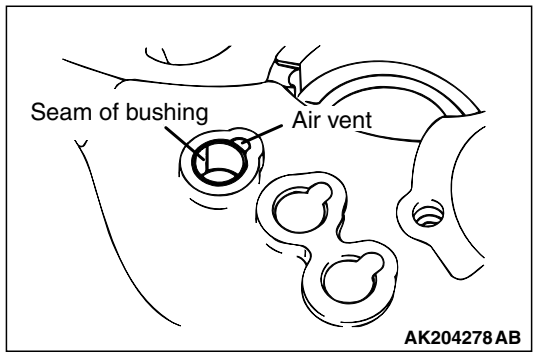
<<B>> OUTER RACE REMOVAL



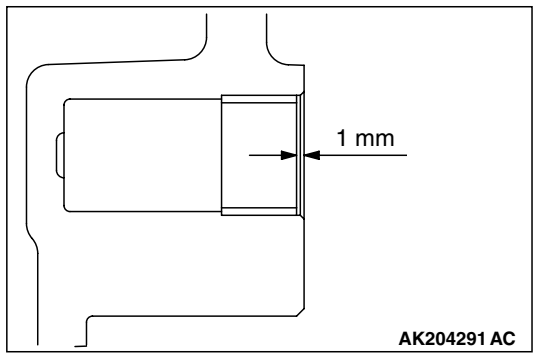
1. Set special tools as indicated in the figure.
   - Valve spring compressor (MD998772)
   - Bearing outer race remover (MD998346)
2. Turn the nut on special tool Bearing outer race remover (MD998346) to pull up on the tool and take out the outer race.

REASSEMBLY SERVICE POINTS

>>A<< BUSHING INSTALLATION

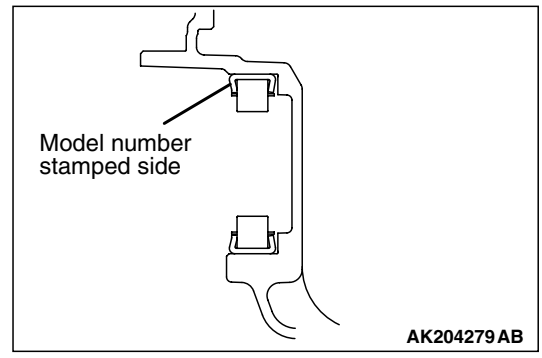


1. Press fit the bushing so the seam is away from the air vent.

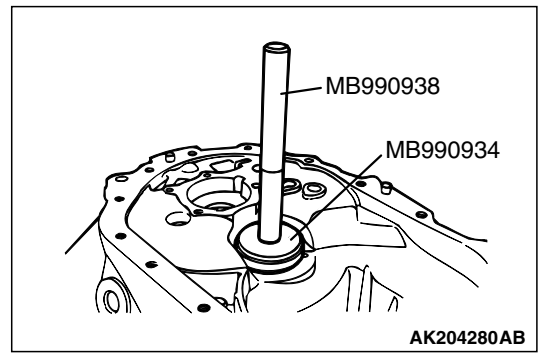


2. Be sure the bushing is fully seated as shown. It must be 1 mm below the housing surface.

>>B<< OUTER RACE INSTALLATION



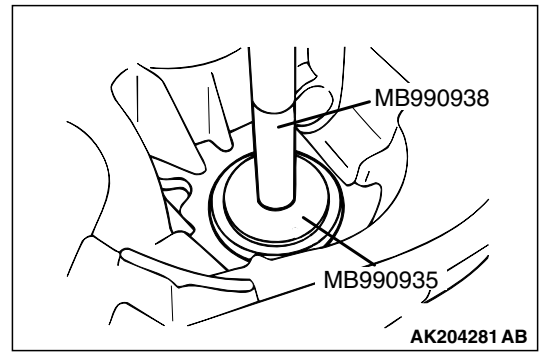
1. Check the installation direction of the outer race.
   Install the outer race so the side with the model number stamping can be seen.



2. Using special tools, press fit the outer race into the clutch housing.
   - Handle (MB990938)
   - Installer adapter (MB990934)

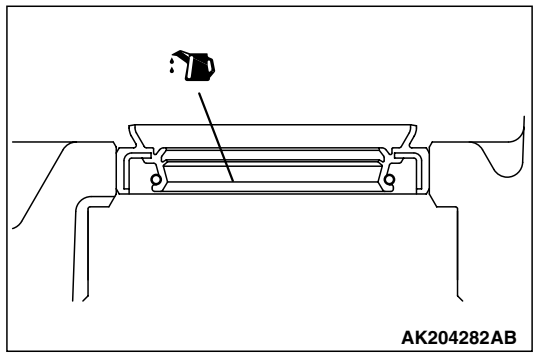
>>C<< OUTER RACE INSTALLATION

1. Check the installation direction of the outer race.

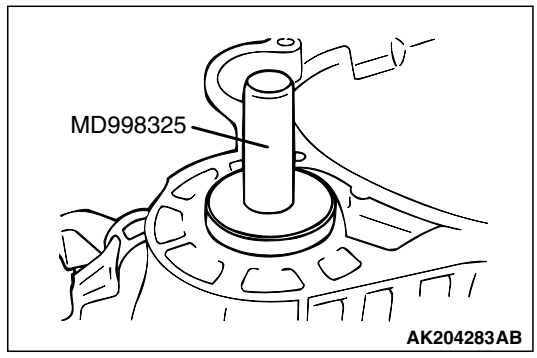


2. Using special tools, press fit the outer race into the clutch housing.
   - Handle (MB990938)
   - Installer adapter (MB990935)

>>D<<OIL SEAL INSTALLATION

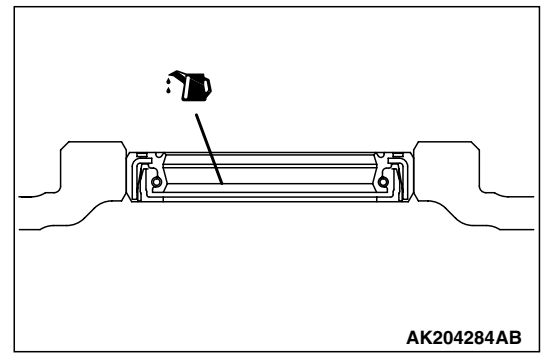


1. Apply gear oil (Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4) to the oil seal lip.

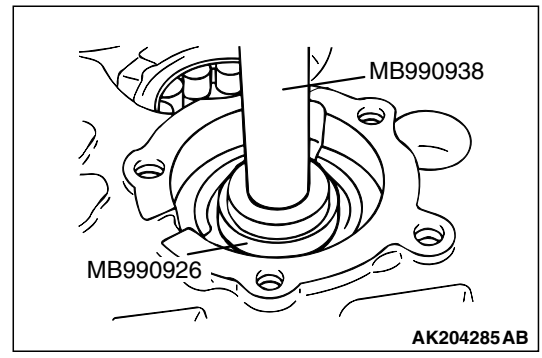


2. Using special tool Differential oil seal installer (MD998325), press fit the oil seal into the clutch housing.

>>E<< OIL SEAL INSTALLATION



1. Apply transmission oil (Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4) to the oil seal lip.

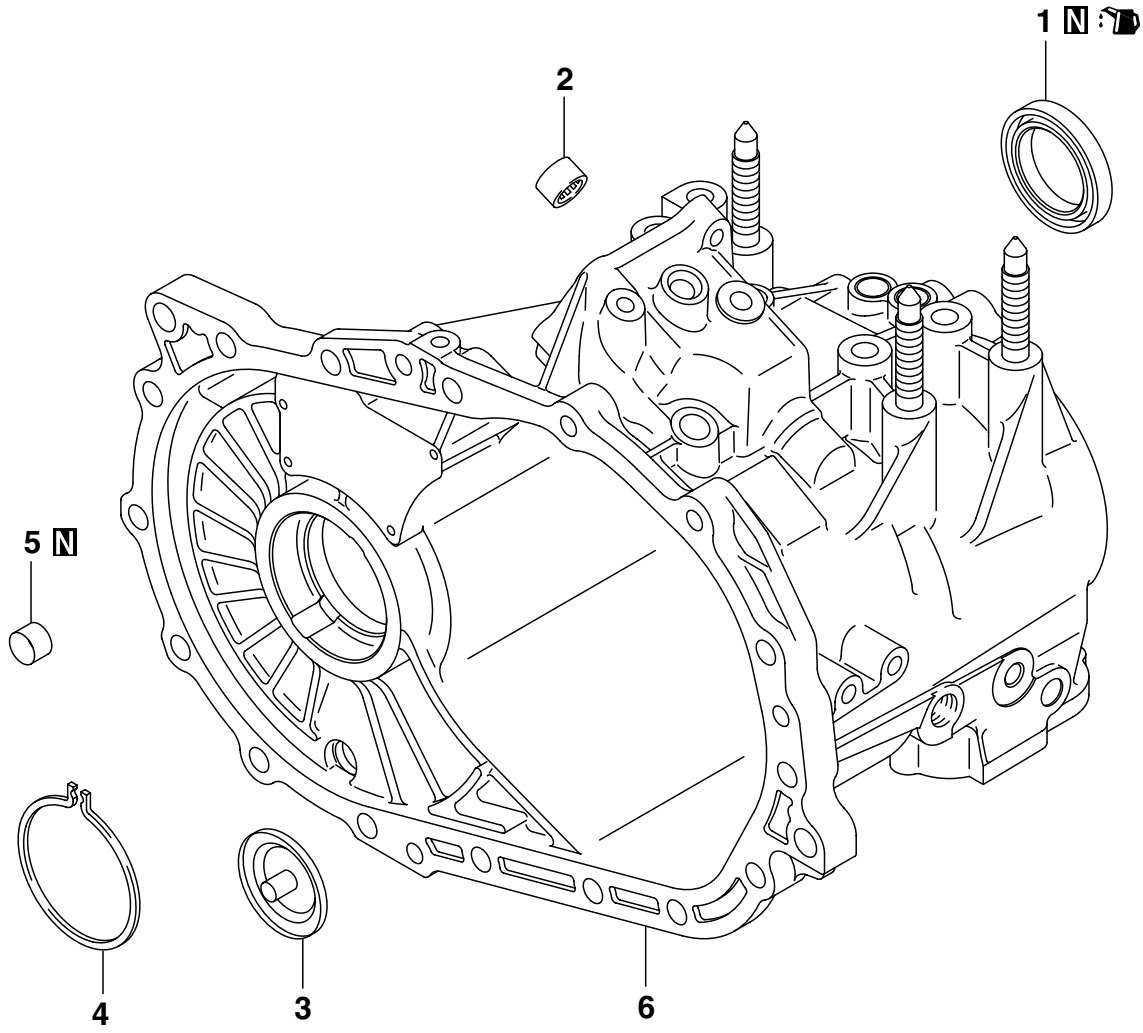


2. Using special tools, press fit the oil seal into the clutch housing.
   - Handle (MB990938)
   - Installer adapter (MB990926)

TRANSMISSION CASE

DISASSEMBLY AND REASSEMBLY

M1222013400109



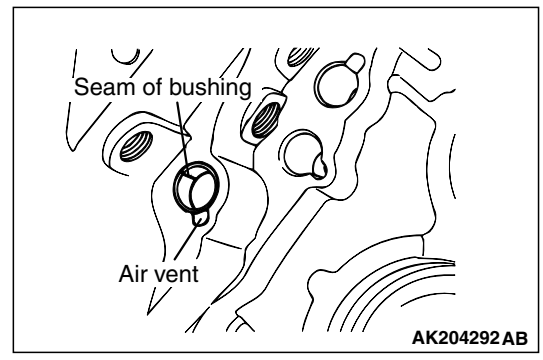
AK204407AB

Disassembly steps

>>C<< 1. Oil seal
>>B<< 2. Needle bearing
3. Oil guide
4. Snap ring
>>A<< 5. Bushing
6. Transaxle

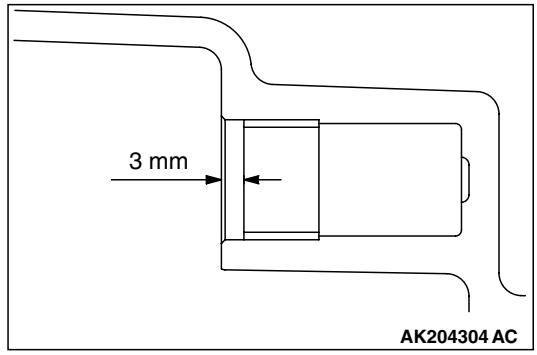
REASSEMBLY SERVICE POINTS

>>A<< BUSHING INSTALLATION



AK204292AB

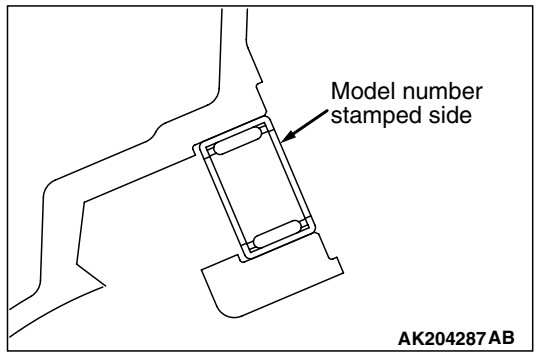
1. Press fit the bushing so the seam is away from the air vent.



2. Be sure the bushing is fully seated as shown. It must be 3 mm below the housing surface.

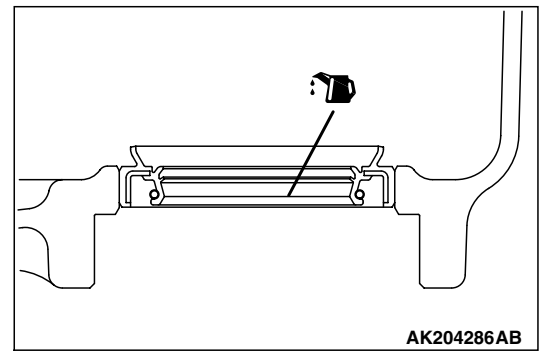
>>B<< NEEDLE BEARING INSTALLATION

1. Check the installation direction of the needle bearing.

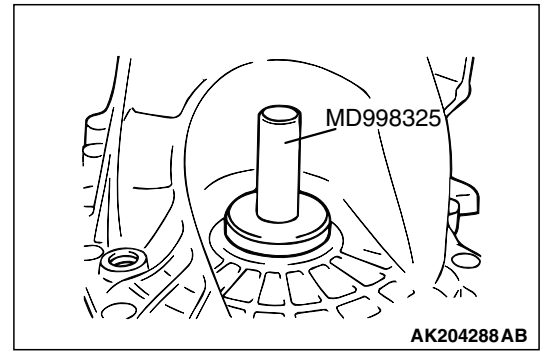


2. Press fit the needle bearing until it is flush with the case.

>>C<<OIL SEAL INSTALLATION



1. Apply gear oil (Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4).

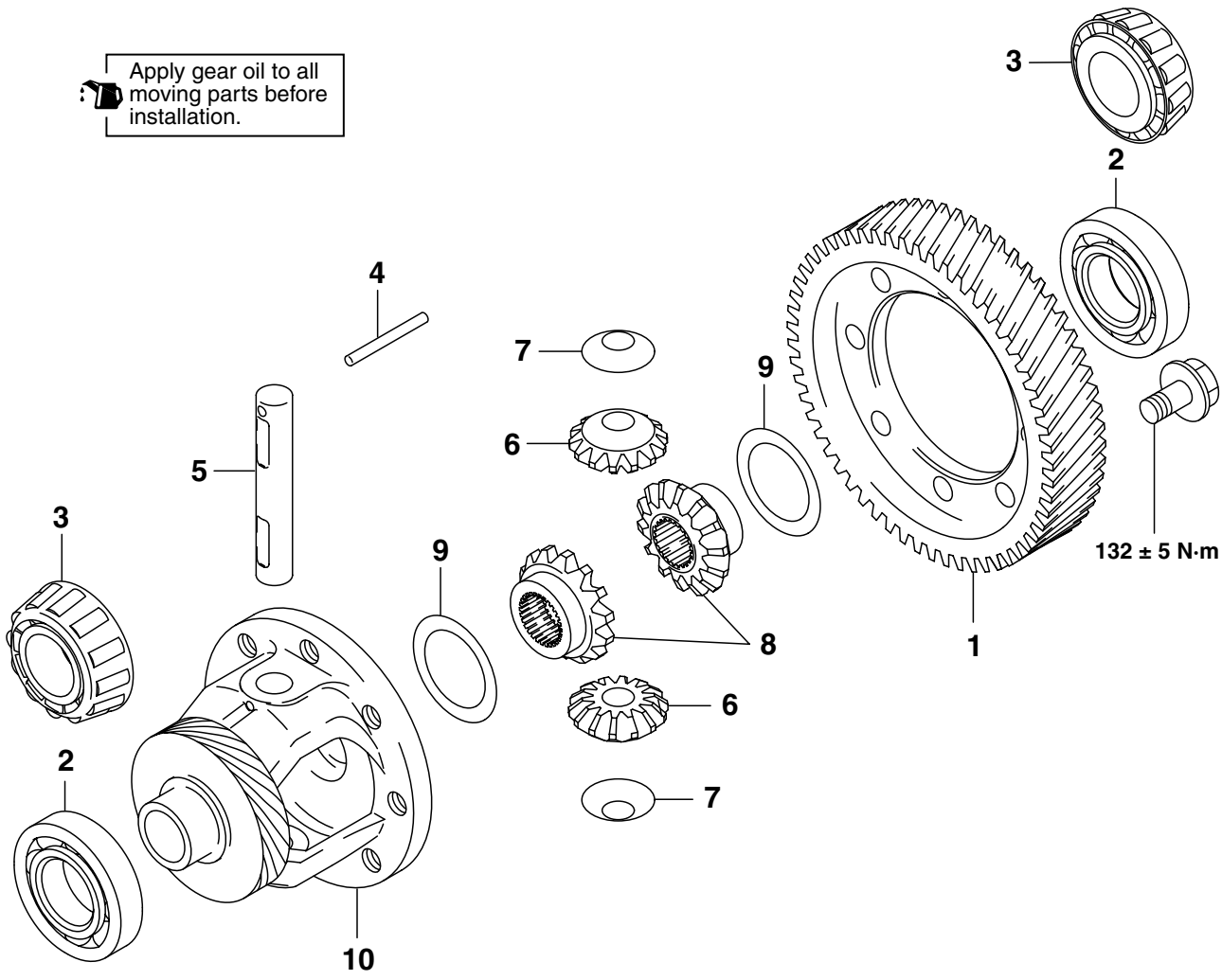


2. Using special tool Differential oil seal installer (MD998325), press fit the oil seal into the transaxle case.

DIFFERENTIAL

DISASSEMBLY AND REASSEMBLY

M1222002500124



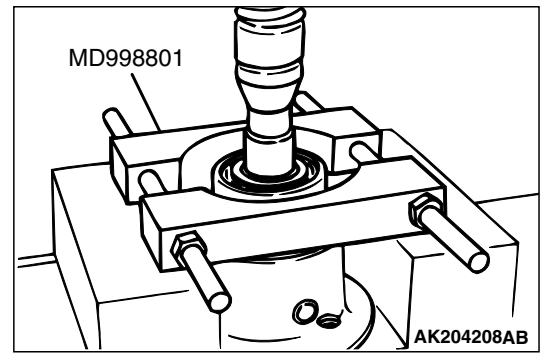
AK300293AB

Disassembly steps

	>>E<<	1.	Differential drive gear
<<A>>	**>>D<<**	2.	Ball bearing <F5M41>
<<B>>	**>>C<<**	3.	Taper roller bearing <F5M42>
	>>B<<	4.	Lock pin
	>>A<<	5.	Pinion shaft
	>>A<<	6.	Pinion
	>>A<<	7.	Washer
	>>A<<	8.	Side gear
	>>A<<	9.	Spacer
		10.	Differential case

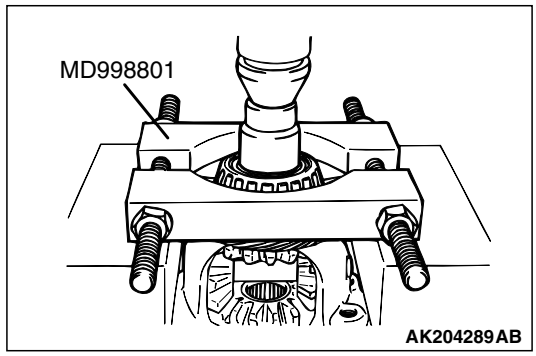
DISASSEMBLY SERVICE POINT

<<A>> BALL BEARING REMOVAL



1. Using special tool Bearing remover (MD998801), support the ball bearing, and then set them on the press.
2. Push down on the differential case with the press and remove the bearing.

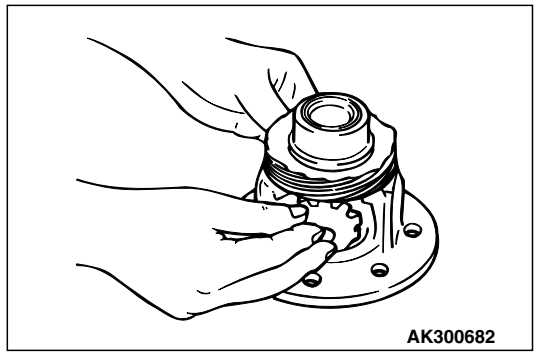
<<B>> TAPER ROLLER BEARING REMOVAL



1. Using special tool Bearing remover (MD998801), support the taper roller bearing, and then set them on the press.
2. Push down on the differential case with the press and remove the bearing.

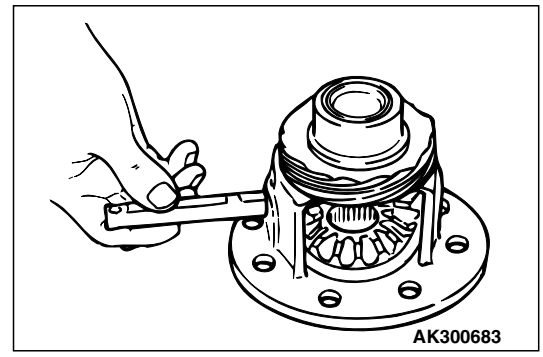
REASSEMBLY SERVICE POINTS

>>A<< SPACER/SIDE GEAR/WASHER/PINION/ PINION SHAFT INSTALLATION

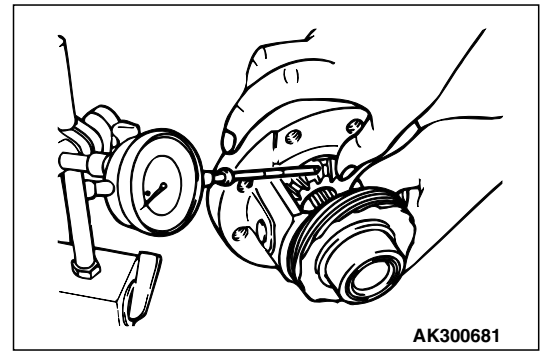


1. After a spacer has been mounted on the back surface of the side gear, install the side gear in the differential case.

   NOTE: When a new side gear is to be installed, mount a medium thickness spacer (1.01 – 1.08 mm).
2. Set the washer on the back of each pinion, and put both pinions simultaneously in mesh with the side gears. While rotating them, install them in position.



3. Insert the pinion shaft.

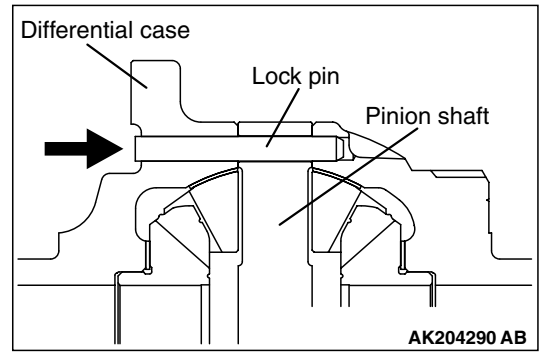


4. Measure the backlash between the side gear and pinion.

   Standard value: 0 – 0.15 mm
5. If the backlash is out of specification, select a spacer that should get the back lash with in the standard value and re-measure the backlash.

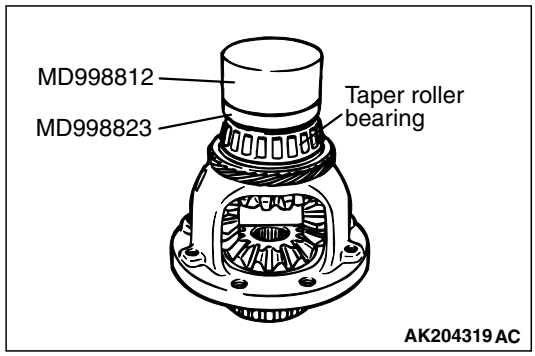
   NOTE: Repeat until the backlash on both sides are equal.

>>B<<LOCK PIN INSTALLATION



Install the lock pin so that it will be oriented in the direction shown.

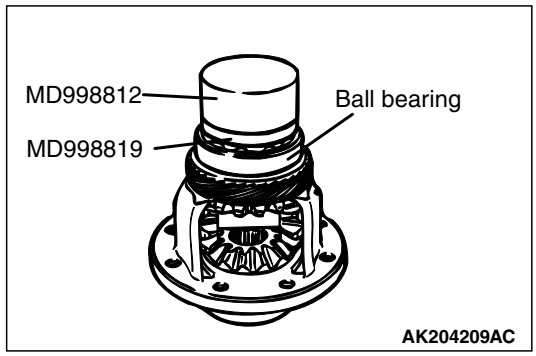
>>C<< TAPER ROLLER BEARING INSTALLATION



Using special tools, install the taper roller bearing with the press.

- Installer cap (MD998812)
- Installer adapter (MD998823)

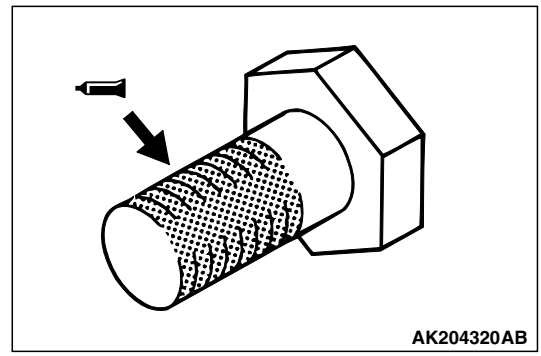
>>D<< BALL BEARING INSTALLATION



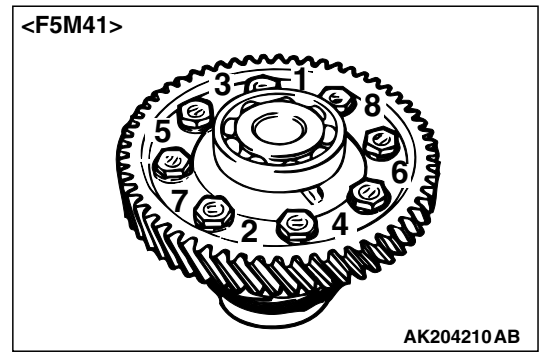
Using special tools, install the ball bearing with the press.

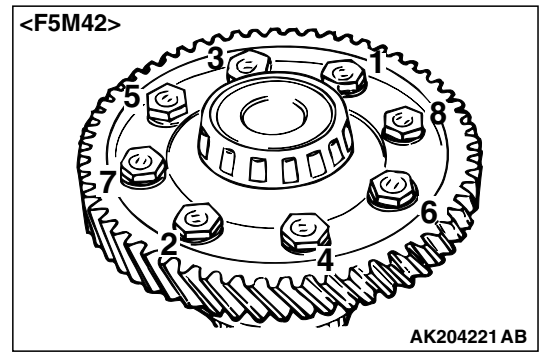
- Installer cap (MD998812)
- Installer adapter (MD998819)

>>E<< DIFFERENTIAL DRIVE GEAR INSTALLATION



1. Apply sealant (3M STUD Locking No.4170 or equivalent) to the entire threaded portion of the bolt.





2. Tighten to the specified torque in the illustrated sequence.

Tightening torque: 132 ± 5 N·m

NOTES